

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

**ATOS LLC,
Patent Owner/Appellant,**

v.

Appeal No. 2023-1620

**ALLSTATE INSURANCE COMPANY
Petitioner/Appellee.**

Proceeding No: IPR2021-01209

NOTICE FORWARDING CERTIFIED LIST

A Notice of Appeal to the United States Court of Appeals for the Federal Circuit was timely filed on March 10, 2023, in the United States Patent and Trademark Office in connection with the above identified *Inter Partes* Review proceeding. Pursuant to 35 U.S.C. § 143 a Certified List is this day being forwarded to the Federal Circuit.

Respectfully submitted,

Under Secretary of Commerce for
Intellectual Property and Director of the
United States Patent and Trademark Office

Date: May 1, 2023

By: /s/ Michael W. Domenico
Michael W. Domenico
Paralegal Specialist
Mail Stop 8
P.O. Box 1450
Alexandria, VA 22313-1450
571-272-9035

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing has been served on counsel for the Appellant and Appellee this 1st day of May, 2023, as follows:

FOR APPELLANT	FOR APPELLEE
Reginald J. Hill Benjamin J. Bradford Adam G. Unikowsky JENNER & BLOCK LLP rhill@jenner.com bbradford@jenner.com aunikowsky@jenner.com	Nathaniel C. Love SIDLEY AUSTIN LLP nlove@sidley.com

By: /s/ Michael W. Domenico
Michael W. Domenico
Paralegal Specialist
Mail Stop 8
P.O. Box 1450
Alexandria, VA 22313-1450
571-272-9035

**U.S. DEPARTMENT OF COMMERCE
United States Patent and Trademark Office**

May 1, 2023

(Date)

THIS IS TO CERTIFY that the attached document is a list of the papers that comprise the record before the Patent Trial and Appeal Board (PTAB) for the *Inter Partes* Review proceeding identified below.

**ALLSTATE INSURANCE COMPANY,
Petitioner,**

v.

**ATOS, LLC,
Patent Owner.**

**IPR2021-01209
U.S. Patent 9,152,609 B2**

By authority of the

**DIRECTOR OF THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

/s/ Michael W. Domenico

Certifying Officer



Prosecution History for IPR2021-01209

Date	Document
07/20/2021	Petition For <i>Inter Partes</i> Review
07/20/2021	Petitioners' Power of Attorney
07/28/2021	Notice of Accord Filing Date
08/10/2021	Patent Owner's Mandatory Notices
10/28/2021	Patent Owner's Preliminary Response
11/11/2021	Petitioner's Reply to Patent Owner's Preliminary Response
11/18/2021	Patent Owner's Sur-Reply In Support Of Patent Owner's Preliminary Response
01/25/2022	Granting Institution of <i>Inter Partes</i> Review
01/26/2022	Scheduling Order
03/31/2022	Notice of Deposition - Michalson
04/01/2022	Petitioner's Updated Exhibit List
04/04/2022	Petitioners Motion for Admission
04/19/2022	Notice of Stipulation to Modify Schedule
04/20/2022	ORDER Granting Petitioner's Motions for Admission <i>Pro Hac Vice</i> N. Love
05/03/2022	Patent Owner's Response
08/02/2022	Petitioner's Reply to Patent Owner's Response
08/25/2022	Notice of Stipulation to Modify Schedule
08/30/2022	Patent Owner Request for Oral Hearing
08/30/2022	Petitioner's Request for Oral Argument
09/09/2022	Patent Owner's Surreply
09/16/2022	Patent Owners Unopposed Motion for Admission <i>Pro Hac Vice</i> of A. Unikowsky
09/26/2022	Setting Oral Argument

Date	Document
09/27/2022	LEAP Practitioner Request and Verification Form (Petitioner)
09/28/2022	Order: on Motion
10/07/2022	Petitioner's Demonstratives
10/08/2022	Patent Owner's Hearing Demonstratives
10/13/2022	Patent Owner's Power of Attorney
10/28/2022	Patent Owners Updated Mandatory Notices
01/05/2023	Other: Hearing transcript
01/24/2023	Final Written Decision: original
03/10/2023	Notice of Appeal

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALLSTATE INSURANCE COMPANY,
Petitioner,

v.

ATOS, LLC,
Patent Owner.

IPR2021-01209
Patent 9,152,609 B2

Before AMANDA F. WIEKER, RICHARD H. MARSCHALL, and
RYAN H. FLAX, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining Challenged Claims 1–4, 6, and 9–25 Unpatentable
Determining Challenged Claims 5, 7, and 8 Not Unpatentable

IPR2021-01209

Patent 9,152,609 B2

Petitioner Allstate Insurance Company challenges claims 1–25 of U.S. Patent No. 9,152,609 B2 (“the ’609 patent” (Ex. 1001)), which is assigned to Patent Owner ATOS, LLC. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (2019). For the reasons set forth below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, and 9–25 of the ’609 patent are unpatentable and that Petitioner has not shown by a preponderance of the evidence that claims 5, 7, and 8 are unpatentable.

BACKGROUND

A. Procedural History

Petitioner filed a Petition requesting *inter partes* review of the challenged claims. Paper 1 (“Pet.”). Patent Owner filed a Preliminary Response (Paper 5), Petitioner filed a Preliminary Reply (Paper 6), and Patent Owner filed a Preliminary Sur-reply (Paper 7). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of claims 1–25 of the ’609 patent on all presented challenges. Paper 8 (“Inst. Dec.”).

After institution, Patent Owner filed a Response (Paper 15, “PO Resp.”), Petitioner filed a Reply (Paper 17, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 20, “PO Sur-reply”). An oral hearing in this proceeding was held on October 13, 2021, and a transcript of the hearing is included in the record (Paper 29, “Tr.”).

B. Related Matters

The parties identify the following proceedings related to the ’609 patent: *ATOS, LLC v. Allstate Insurance Company, Esurance Insurance Services, Inc., and Arity, LLC*, No. 1:20-cv-06224 (N.D. Ill.); IPR2021-01118. Pet. 3; Paper 4, 2. Patent Owner also identifies IPR2021-

IPR2021-01209

Patent 9,152,609 B2

01449 as a related matter. Paper 28, 2 (Patent Owner's Updated Mandatory Notices).

C. The '609 Patent

The '609 patent relates to a method that detects “the state of a vehicle by a portable device carried by a user and the various actions taken upon the detection of the state.” Ex. 1001, 1:16–18. In the background discussion of related art, the '609 patent describes problems the art attempts to address, such as using a portable device to remember a parking spot or disabling certain user actions on a portable device while a user moves or exceeds a speed limit. *Id.* at 1:20–25, 1:48–51. The '609 patent also describes disadvantages of using GPS alone to address these problems. *See id.* at 1:42–47, 1:51–61.

To address the drawbacks in the related art, the '609 patent employs “an accelerometer in a portable device” to detect “the stopping and starting of a car.” Ex. 1001, 2:16–17. According to the '609 patent, an accelerometer can detect engine vibrations to determine whether an engine remains running or has stopped running, and can also detect vibrations that indicate walking by the user. *Id.* at 2:16–25. In one embodiment, the '609 patent describes combining the state of the vehicle determined using accelerometer information (engine on/off) with GPS location information to determine the location of a stopped car. *Id.* at 2:26–33.

IPR2021-01209
 Patent 9,152,609 B2

Figure 1 of the '609 patent is reproduced below.

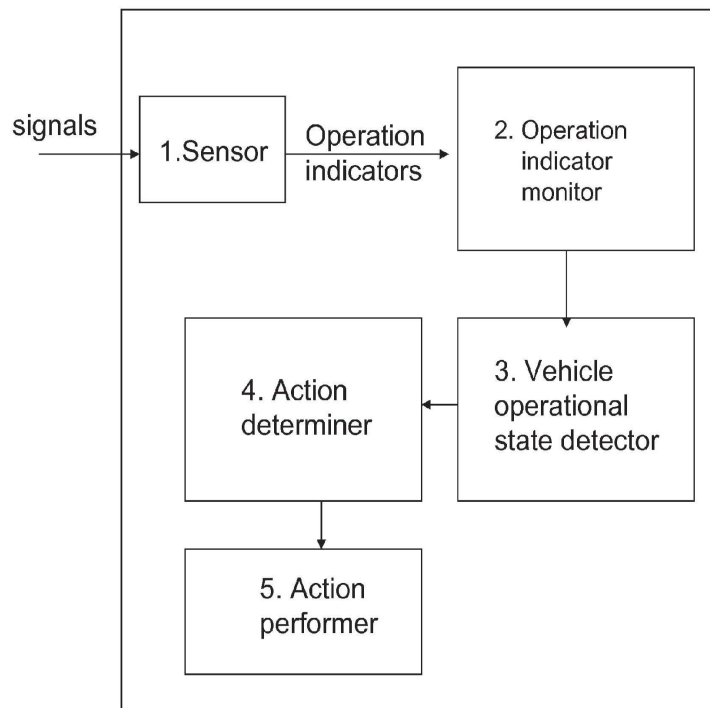


Figure 1: Portable device for taking action based on state of vehicle.

Figure 1 “illustrates the portable device apparatus carried by an individual to determine if certain actions should be performed.” Ex. 1001, 3:50–52. A portion of Figure 1 depicts a sensor receiving “signals” as an input and generating “[o]peration indicators” as an output. *Id.* at Fig. 1. The '609 patent describes basing a decision to perform an action on “determining the operational state of a vehicle surrounding the portable device,” which in turn involves monitoring “an onboard sensor on the device.” *Id.* at 3:52–55. According to the '609 patent, the sensor receives signals from the environment and converts them to “operation indicators.” *Id.* at 3:54–57. The '609 patent provides an example that employs a vibration sensor, such as an accelerometer, that measures “forces over time (i.e. the signals) and convert[s] them into number of vibrations measured per second (operation indicators).” *Id.* at 3:57–60.

IPR2021-01209

Patent 9,152,609 B2

The operation indicators from the sensor “are forwarded to the operation indicator monitor unit (unit 2) which continuously monitors and collects the operation indicators over time.” Ex. 1001, 4:9–12. The monitor unit then forwards the operation indicators to an “operational state detector unit” that “uses pre-determined criteria which are a set of rules to help determine the operational state of the vehicle.” *Id.* at 4:12–16. The next step described by the ’609 patent involves sending the operational state information to an “[a]ction determiner” to determine whether to take an action and an “[a]ction performer” to perform any action decided upon by the action determiner. *Id.* at 4:36–41, Fig. 1.

D. Challenged Claims

Petitioner challenges claims 1–25 of the ’609 patent. Pet. 4. Claims 1 and 25 are independent. Ex. 1001, 11:2–14:41. Claim 1 is illustrative and reproduced below:

1. A method of performing one or more actions on a portable device carried by an individual, comprising:
 - monitoring, at least one operation indicator transparently to the individual, wherein the at least one operation indicator is created by an on-board component of the portable device when the portable device is located inside a vehicle;
 - detecting the at least one operation indicator that meets one or more predetermined criteria;
 - determining one or more operational states of the vehicle based on the one or more predetermined criteria;
 - determining at least one action to be performed on the portable device carried by the individual, based at least in part on:
 - i) the one or more operational states of the vehicle and
 - ii) at least one previous change in the operational state of the vehicle wherein the at least one previous change in

IPR2021-01209

Patent 9,152,609 B2

the operational state comprises at least one of the following: a change from the vehicle being in a moving state to being a lingering state; a change from the vehicle engine being in an on-state to being in an off-state; a change from the vehicle being in the moving state to being in a stationary state; a change from the vehicle's speed being in a below predetermined speed limit state to being in an above the predetermined speed limit state; a change from the vehicle being in the stationary state to being in the moving state; a change from an engine being in an is off-state to being in an on-state; and a change from the engine being in the is off-state to the vehicle being in the moving state; and

performing the at least one action on the portable device.

Ex. 1001, 11:2–11:33.

IPR2021-01209

Patent 9,152,609 B2

A. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–25 are unpatentable based on the following grounds (Pet. 4):

Claims Challenged	35 U.S.C. §	References/Basis
1–5, 9, 11, 13–14, 17–19, 21–25	102 ¹	Kim ²
6–8, 15	103(a)	Kim, Rubin ³
10, 12	103(a)	Kim, Mitrovic ⁴
16, 18, 19	103(a)	Kim, Barbera ⁵
20	103(a)	Kim, Barbera, Kohli ⁶

Petitioner also relies on the Declarations of Dr. William R. Michalson and Dr. Hsieh-Yee. *See* Exs. 1003 (Michalson Decl.), 1011 (Yee Decl.). Patent Owner relies on the Declaration of Dr. Jeremy Cooperstock. *See* Ex. 2001 (“Cooperstock Decl.”).

ANALYSIS

A. Legal Standards

To prevail in its challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2012); 37 C.F.R.

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103. Because the ’609 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. §§ 102 and 103. Our decision would not differ based on applying either pre- or post-AIA law.

² KR 10-0775006, published June 4, 2007 (Ex. 1005, “Kim”).

³ US 8,065,508 B2, filed November 10, 2008 (Ex. 1006, “Rubin”).

⁴ Mitrovic, D., *Reliable Method for Driving Events Recognition*, IEEE Transactions on Intelligent Transportation Systems, Vol. 6, No. 2 (June 2005) (Ex. 1008, “Mitrovic”).

⁵ US 7,505,784 B2, published March 29, 2007 (Ex. 1007, “Barbera”).

⁶ US 6,236,937 B1, issued May 22, 2001 (Ex. 1013, “Kohli”).

IPR2021-01209

Patent 9,152,609 B2

§ 42.1(d) (2018). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner.⁷ See *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

Petitioner relies on both anticipation and obviousness in its challenges to the claims of the ’609 patent. To anticipate a claim under 35 U.S.C. § 102, “a single prior art reference must expressly or inherently disclose each claim limitation.” *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That “single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

A claim is unpatentable as obvious under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

⁷ Although we primarily address Patent Owner’s arguments below and identify many of them as unpersuasive, we do not shift the ultimate burden from Petitioner. We focus on such arguments because they identify issues in dispute and we address them as unpersuasive only in the context of the record and Petitioner’s assertions.

IPR2021-01209

Patent 9,152,609 B2

(2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations, also known as objective indicia of non-obviousness. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “The person of ordinary skill in the art is a hypothetical person who is presumed to know the relevant prior art” at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.*

Petitioner contends that a person of ordinary skill in the art at the time of the invention “would have been someone with a bachelor’s or master’s degree in the field of mechanical engineering, electrical engineering, or physics or with a bachelor’s or master’s degree in a related field and at least three years of experience in designing or developing portable device systems.” Pet. 4 (citing Ex. 1003 ¶ 52). Patent Owner does not address Petitioner’s proposal, but offers a competing proposal. PO Resp. 6. Patent Owner contends that a person of ordinary skill in the art at the time of the invention “would have been someone [who] had a bachelor’s degree in

IPR2021-01209

Patent 9,152,609 B2

mechanical or electrical engineering and at least 2 years of experience in the field working with sensors and/or computer processing of sensor data.” *Id.* at 7 (citing Ex. 2001 ¶ 18).

The parties’ proposals do not differ in any respect that would suggest our determination on this issue would impact any of our ultimate findings in this case. We note that both parties’ proposals include a person having a degree in mechanical or electrical engineering with at least two years of relevant industry experience. Petitioner’s proposal allows for a broader range of technical degrees and requires an additional year of relevant experience in comparison to Patent Owner’s proposal. Based on the full record before us, because the asserted references describe the problems and solutions of developing a portable device incorporating sensors including accelerometers, and a person having a degree in physics may also have the pertinent training to work in the field, we apply Petitioner’s broader proposal to our analysis (but, our decision would not change were we to adopt Patent Owner’s proposal).

Accordingly, we adopt Petitioner’s asserted level of ordinary skill as set forth by its declarant Dr. Michalson because it is consistent with the problems identified and solutions provided in the ’609 patent and the prior art.

C. Claim Construction

In *inter partes* reviews, we interpret claims under the same standard used in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2019); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) (setting forth claim construction approach in district court cases). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at

IPR2021-01209

Patent 9,152,609 B2

the time of the invention, in light of the language of the claims, the Specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence is generally “less reliable” than the intrinsic record. *See id.* at 1318–19. Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

The parties dispute the meaning of three claim terms: “operation indicator,” “on-board component,” and “transparently.” Pet. 7–14; PO Resp. 7–18; Pet. Reply 1–8; PO Sur-Reply 3–7, 9–12. Here, as in our decision granting institution, we determine that we need not construe “on-board component” because no issue turns on our construction of that limitation. *See Nidec*, 868 F.3d at 1017; Inst. Dec. 9. We address the parties’ arguments as to “operation indicator” and “transparently” in turn below. To the extent the parties raise implicit claim construction disputes in connection with their arguments as to the content of the prior art, we address those arguments when discussing Petitioner’s challenges to the claims.

1. Operation Indicator

Independent claim 1 requires the step of monitoring “at least one operation indicator” and independent claim 25 requires a sensor generating “at least one operation indicator” and “at least one operation indicator monitor configured to monitor one or more operation indicators.” Ex. 1001, 11:4, 14:19–22. Petitioner argues that we should construe “operation indicator” to mean “a sensor measurement determined from signals from the environment.” Pet. 7. Petitioner contends that although the ’609 patent does not provide an express definition of “operation indicator,” it defines the term

IPR2021-01209

Patent 9,152,609 B2

“through context” when it states that vibration sensors measure forces over time and “convert them into number of vibrations measured per second (operation indicators).” *Id.* (quoting Ex. 1001, 3:57–60).⁸ Petitioner also relies on the statement in the ’609 patent that the “sensor receives signals from the environment and converts them into operation indicators.” *Id.* at 7–8 (quoting Ex. 1001, 3:63–67). We note that after we considered the parties’ pre-institution arguments as to the proper construction of “operation indicator,” we adopted Petitioner’s construction in our Institution Decision. Inst. Dec. 9–13.

In its Response, Patent Owner argues that we should construe “operation indicator” to mean “information derived by converting sensing device output determined from signals from the environment.” PO Resp 7. Patent Owner argues that Petitioner’s construction “would equate the raw outputs of a sensing device with ‘operation indicators,’” while under Patent Owner’s construction, “sensing device measurements are not, standing alone, ‘operation indicators.’” *Id.* at 7–8. According to Patent Owner, “the outputs from the sensing device must be *converted* into operation indicators.” *Id.* at 8 (emphasis added). Patent Owner argues that the Specification supports its construction because it emphasizes “that operation indicators result from a *conversion*.” *Id.* (citing Ex. 1001, 3:54–57, 3:63–64, 4:5–9).

Patent Owner argues that we erred in our Institution Decision when we found that the Specification only discusses “converting” in the context of

⁸ The parties typically underline reference names, italicize claim language, and bold large portions of quoted text. *See, e.g.*, Pet. 7–8, 16. For consistency and readability, we remove such emphasis in our quotations of the parties’ papers.

IPR2021-01209

Patent 9,152,609 B2

converting signals from the environment. PO Resp. 8. Patent Owner argues that “when the specification speaks of converting signals from the environment, it *is* speaking of converting the output of a sensing device” because the signals from the environment are signals measured by sensing devices. *Id.* Patent Owner relies on the Specification’s reference to a vibration sensor example for support, where the Specification states that “a vibration sensor may measure forces over time (i.e. the signals) and convert them into number of vibrations measured per second (operation indicators).” *Id.* at 9 (quoting Ex 1001, 3:54–61). Patent Owner argues that “[f]orces over time” refers to “the raw output of the sensing device” that “is converted into an operation indicator in units of vibrations per second.” *Id.* With support from its declarant Dr. Cooperstock, Patent Owner further argues that a conversion to vibrations per second must take place because accelerometers output force measurements in m/s^2 . *Id.* at 9–10 (citing Ex. 2001 ¶¶ 19–24, 41–46). Patent Owner further contends that Petitioner’s declarant, Dr. Michalson, agrees with Dr. Cooperstock that an accelerometer’s output is in units of gravitational force, and that to obtain “vibrations per second” a “POSITA would understand that computation would need to be performed on an accelerometer output.” *Id.* at 10–11 (citing Ex. 2010, 59:12–60:24, 62:20–63:14). As to the claim’s reference to an “on-board component” that creates the “operation indicator,” Patent Owner argues that “an on-board component, such as a sensor, could have multiple parts” including “a processor to execute software and perform computations on the measurements.” *Id.* at 11–12 (citing Ex. 2001 ¶¶ 36, 40–46). As to the difference between “converting” and “determined from,” which both appear in Patent Owner’s construction, Patent Owner argues that “converting” does not encompass the prior art and “determined from” tracks the Specification’s

IPR2021-01209

Patent 9,152,609 B2

description of sensory signals that are “determined from the environment” rather than from a centralized source such as GPS. *Id.* at 12–14 (citing Ex. 1001, 3:49–56, 3:63–64, 3:66–4:4; Ex. 2001 ¶ 48).

Petitioner argues that Patent Owner’s construction improperly adds “an additional ‘converting sensing device output’” step into the claims. Pet. Reply 2–4. Petitioner argues that the claims never mention converting sensing device output and the portion of the Specification Patent Owner relies upon does not support any additional conversion step as Patent Owner contends. *Id.* at 2 (citing Ex. 1001, 3:56–60). According to Petitioner, the Specification merely describes sensors that “take in environmental signals and output ‘operation indicators’” “without any additional process acting on the sensor’s output.” *Id.* at 2–3 (citing Ex. 1001, Figs. 1–2). Petitioner argues that Patent Owner’s declarant testimony contradicts the intrinsic record by referring to conversion steps and components for accomplishing the conversion that the Specification never describes. *Id.* at 3. Petitioner also contends that the testimony assumes that a sensing device integrates with other circuitry capable of storing measurements, executing software, and performing computations on the measurement to perform the conversion step but, if so, the “sensor” would then include the additional components and would still output the operation indicators without further processing. *Id.* at 3–4 (citing Ex. 2001 ¶ 36). Petitioner further alleges that there is no meaningful distinction between “converted from” and “determined from” in view of the prior art, and both the ’609 patent Specification and the prior art disclose standard accelerometers used in cell phones and any alleged “converting” takes place within these ordinary sensors. *Id.* at 4–5.

In its Sur-reply, Patent Owner repeats its argument that operation indicators require a conversion and that Petitioner’s proposed construction

IPR2021-01209

Patent 9,152,609 B2

improperly covers an accelerometer that “outputs measurements determined from signals from the environment.” PO Sur-reply 3–4. Patent Owner argues that “an accelerometer *cannot* produce a measurement of vibrations per second” and that both parties’ declarants agree that accelerometer output data in gravitational force such as m/s^2 . *Id.* at 4–5. According to Patent Owner, the Specification describes “collecting an accelerometer output over time and then converting that output into an operation indicator,” such that Patent Owner’s construction does not add a converting step beyond the conversion the Specification discloses. *Id.* at 5–6. Patent Owner further argues the term “sensor” as used in the ’609 patent refers not to an accelerometer alone, but an accelerometer that feeds measurements “into a processing component of the sensor to convert those measurements into operation indicators.” *Id.* at 6–7 (citing Ex. 2001 ¶ 36).

Based on our review of the parties’ arguments and cited evidence, we once again agree with Petitioner’s proposed construction and disagree with Patent Owner’s contention that “operation indicators” mean something more than the output of a sensor measurement based on signals from the environment. First, the claim language strongly supports Petitioner’s position, and undermines Patent Owner’s argument that some specific “conversion” must take place to create an operation indicator. In claim 1, the limitation in question appears in a step requiring “monitoring, at least one operation indicator . . . wherein the . . . operation indicator is created by an on-board component.” *See* Ex. 1001, 11:4–6. Claim 25 refers to a “sensor generating at least one operation indicator” and an “operation indicator monitor configured to monitor one or more operation indicators.”

IPR2021-01209

Patent 9,152,609 B2

Id. at 14:19–22.⁹ Nothing in the limitations suggests anything more than “monitoring” the operation indicator created by the on-board component—no extra converting of the on-board component’s output appears in the claims nor does the claim language suggest that mere monitoring of the indicator requires further conversion prior to the monitoring.

Second, the Specification supports Petitioner’s construction by equating “operation indicator” with a sensor’s output. Ex. 1001, 3:56–60 (“[A] vibration sensor may measure forces over time (i.e. the signals) and convert them into number of vibrations measured per second (operation indicators).”). In the context of operation indicators, “converting” involves converting signals from the environment, not converting the output of the sensor as Patent Owner argues. *Id.* Patent Owner repeatedly contends that the Specification contemplates an additional conversion beyond converting signals from the environment to a sensor output, and relies on the Specification’s description of sensor output in vibrations per second, an operation indicator, which allegedly requires converting the sensing component’s output. PO Resp. 7–10; PO Sur-reply 4–7. In a related argument, Patent Owner contends that the ’609 patent contemplates a multi-part sensor that includes other components such as a processor that performs the conversion of the sensing component’s output into operation parameters. *See, e.g.*, PO Sur-reply 6–7. But the Specification fails to describe the alleged conversion step that Patent Owner attempts to read into the claim, or a multi-part sensor with a processor that performs the conversion step. *See*

⁹ The parties do not focus on any distinctions between the claims or argue that certain differences in the claim language further support their arguments. *See* PO Resp. 20 (characterizing claim 25’s “operation indicator” limitation as “analogous” to claim 1’s similar limitation).

IPR2021-01209

Patent 9,152,609 B2

Ex. 1001, 3:56–60, Fig. 1. Patent Owner’s heavy reliance on declarant testimony does not undermine our construction. *See* PO Resp. 9–13 (citing Ex. 2001); PO Sur-reply 4–7 (same). We find such extrinsic evidence unpersuasive when it lacks support in the intrinsic evidence.

Here, as discussed above, the claim language and Specification both lack support for the conversion step Patent Owner seeks to read into the claim, or the hardware that allegedly performs the step. For example, claim 1 refers to an “operation indicator is created by an on-board component” and the related portion of the Specification describes an on-board sensor that converts signals from the environment into operation indicators. Ex. 1001, 3:54–57. As an “example,” the Specification goes on to describe a “vibration sensor” used to “measure forces over time (i.e. the signals) and convert them into the number of vibrations measured per second (operation indicators).” *Id.* at 3:57–60. The Specification also states that “[a]n example of a vibrational sensing device is an accelerometer.” *Id.* at 3:61–62. In short, the Specification states that an accelerometer may be used to convert signals from the environment and output operation indicators in the form of vibrations measured per second, undermining Patent Owner’s argument that accelerometers alone cannot produce operation parameters. *See* PO Resp. 8–13; PO Sur-reply 3–7.

Further, even if the ’609 patent describes a multi-part sensor wherein a component translates the output of the accelerometer, as Patent Owner contends, this does not undermine our construction. The claims do not require a vibration sensor or accelerometer—claim 1 refers to an onboard component and claim 25 refers to a sensor as generating operation indicators. Even if one “example” in the Specification describes an accelerometer or vibration sensor producing readings in vibrations per

IPR2021-01209

Patent 9,152,609 B2

second, that does not require defining the claim term “operation indicator” to require the conversion step Patent Owner proposes. *See* Ex. 1001, 3:54–62. As Petitioner correctly argues, such a multi-component sensor would still be a “sensor” within the ’609 patent and the translated output would still be an “operation indicator” from a sensor. Pet. Reply 2–4. This understanding is consistent with the Specification.

Based on the foregoing, we construe “operation indicator” to mean “a sensor measurement determined from signals from the environment.”

2. *Transparently*

Independent claim 1 (but not independent claim 25) requires “monitoring, at least one operation indicator *transparently* to the individual.” *See, e.g.*, Ex. 1001, 11:4–5 (emphasis added). Petitioner does not expressly construe “transparently” in the Petition, but alleges that the prior art (Kim) “monitors information in a way that is not visible to the user, (i.e., ‘transparently to the individual’).” Pet. 16–17 (citing Ex. 1003 ¶ 137; Ex. 1005 ¶ 43). Petitioner’s declarant Dr. Michalson testifies that Kim teaches the limitation because it “monitors information in a way that is not visible to the user” and “without user input or observation.” Ex. 1003 ¶ 137 (citing Ex. 1005 ¶ 74). Patent Owner argued against Petitioner’s application of the limitation in its Preliminary Response, but in our Institution Decision we found Petitioner’s arguments and evidence on that record sufficient to carry its burden, and invited the parties to expressly construe “transparently” during the trial. Inst. Dec. 16–18.

In the Patent Owner Response, Patent Owner argues that we should construe “transparently” to mean “without requiring user interaction.” PO Resp. 16. Patent Owner argues that a method that acts automatically fails to meet this construction if it “requires the user to perform an explicit action to

IPR2021-01209

Patent 9,152,609 B2

effect the process” because the “user must be agnostic to the conditions required for the action to be performed.” *Id.* (citing Ex. 2001 ¶ 71). Patent Owner asserts that this “notion of transparently in computing is well understood.” *Id.* at 16–17 (citing Ex. 2001 ¶ 57; Ex. 2003; Ex. 2005). Patent Owner also contends that the Specification supports this reading because it describes taking certain actions undertaken “automatically and transparently to the user,” which suggests that “transparently” means something more than “automatically.” *Id.* at 17 (citing Ex. 1001, 7:4–6). Patent Owner also argues that an example provided in the Specification, where the device detects the speed of the vehicle and adjusts the volume of music based on that speed, supports its construction because the user does not interact with the device to change the volume. *See id.* at 16–17 (citing Ex. 1001, 7:6–11; Ex. 2001 ¶ 59).

Petitioner argues that we need not construe “transparently” because Patent Owner’s construction fails to distinguish over the prior art by failing to tie the “transparently” construction to the application of the prior art to the “monitoring” step in which the term appears. Pet. Reply 5–6. According to Petitioner, Patent Owner improperly relies on aspects of the Specification that refer to transparently performing some action, which later claim elements addressed after the “monitoring” step in claim 1. *Id.* at 6–7 (citing PO Resp. 15–18, 22–25). Petitioner also argues that Patent Owner’s construction lacks support because it excludes embodiments in the Specification requiring a user to power on a mobile device or carry it into a vehicle to initiate some action by the device. *Id.* at 7–8 (citing Ex. 1016 ¶¶ 22–23). Petitioner contends that if we need to construe “transparently,” we should construe it to mean “not visible to the user.” *Id.* at 8 (quoting Ex. 1003 ¶ 137).

IPR2021-01209

Patent 9,152,609 B2

In its Sur-reply, Patent Owner argues that Petitioner’s proposed construction and related declarant testimony lack adequate analysis and support. PO Sur-reply 10 (citing Ex. 1003 ¶ 137). Patent Owner also argues that Dr. Michalson invokes conflicting interpretations of “transparently” in his declaration, including “not visible to the user” (advocated by Petitioner as the correct construction) and also “without user input,” which Patent Owner interprets as consistent with its construction (“without requiring user interaction”). *Id.* at 10–11. Patent Owner also contends that Dr. Michalson’s testimony conflicts with his testimony in a related *inter partes* review involving a related patent, where Dr. Michalson stated that the “transparently limitation is satisfied when a process ‘*supports* interaction with the user.’” *Id.* at 11 (citing IPR2021-01449, Ex. 1003 ¶ 248). As to Petitioner’s argument that the ’609 patent Specification contemplates some action by the user to initiate certain actions, Patent Owner argues that any device “must be provided with power and brought to the environment where it will be used” and “some processes that run on a device require user interaction and some do not—the latter are transparent.” *Id.* at 12.

As an initial matter, we generally agree with Petitioner that we need not formally construe “transparently” because even using Patent Owner’s construction, Petitioner establishes that Kim discloses the limitation, as we will discuss in more detail below. Patent Owner, however, asserts that if we adopt its construction for “transparently” that will lead to a finding that Kim fails to disclose the limitation in which the term appears. *See* PO Resp. 16, 22–25; PO Sur-reply 12–14. To clarify how we will apply Patent Owner’s construction, and to make clear that we do not adopt all of Patent Owner’s arguments and interpretations of its construction, we provide the following limited claim construction analysis.

IPR2021-01209

Patent 9,152,609 B2

First, we agree with Petitioner that the “transparently” limitation only appears in the “monitoring” limitation— i.e., “monitoring, at least one operation indicator *transparently* to the individual”—and only limits the monitoring aspect of the claims. *See, e.g.*, Ex. 1001, 11:4–5 (emphasis added); Pet. Reply 6–8. We reject any assertion by Patent Owner that its construction may require transparently performing an action as well as transparently monitoring an operation indicator. *See* PO Resp. 16, 24 (suggesting that a user of Kim’s device must take an action to “determine the context and perform the appropriate action”). Second, and relatedly, applying Patent Owner’s proposed “without requiring user interaction” interpretation does not require a complete lack of user interaction with the device outside of the “monitoring” step. For example, the parties appear to agree that the user must power on the device and bring it inside a vehicle for the device to operate properly, but those “required” user interactions with the device do not fall outside the scope of the claims. *See* Pet. Reply 8; PO Sur-reply 12. Accordingly, we do not read the “without requiring user interaction” construction as precluding user interaction with the device to prepare it for transparent monitoring (e.g., powering the device on and bringing it inside the vehicle in a proper position to monitor).

With these clarifications in mind, we need not resolve the dispute as to which proposed construction more accurately conveys the meaning of “transparently,” as the prior art discloses the limitation using either construction.

D. Anticipation

Petitioner contends that Kim anticipates claims 1–5, 9, 11, 13, 14, 17–19, and 21–25. Pet. 4, 14–43. Petitioner relies on the Declaration of Dr. Michalson in support of its contention. *See id.* (citing Ex. 1003).

IPR2021-01209

Patent 9,152,609 B2

1. Overview of Kim

Kim “relates to a terminal device for providing a context aware-based mobile service.” Ex. 1005 code (57) (Abstract). More specifically, Kim discloses a terminal device that includes sensors that output data to a “context awareness unit” that estimates the environment surrounding the user of the terminal device. *Id.* The terminal device then outputs context-appropriate content to the user. *Id.* According to Kim, using its disclosed system, “it is possible to seamlessly provide a mobile service suitable for the user’s current location and context automatically without the user’s intentional selection inside of a vehicle, outdoors or indoors.” *Id.*

In one embodiment, Kim discloses terminal 100 having sensing unit 110 that includes a number of sensors, including camera 111, microphone 112, GPS 113, and acceleration sensor 114. Ex. 1005 ¶¶ 38–40. Acceleration sensor 114 detects “the motion state of an object by detecting dynamic forces such as acceleration, vibration, and impact” and can detect engine and vehicle vibrations. *Id.* ¶¶ 40–41. Kim discloses sending the data from sensing unit 110 to context recognition unit 120, which “estimates an external context or a user’s behavior by comparing the sensor data sensed through the sensor unit 110 with a pattern of reference signals stored therein.” *Id.* ¶ 42. According to Kim, “the context awareness unit 120 continuously detects a change in the user’s context and detects a change in a service environment, for example, an area such as inside, outdoors, or indoors of the vehicle 200.” *Id.* ¶ 43. After examining the user’s context, user intention setting unit 130 examines the context and determines the user’s intention based on information previously input and stored by the user, and service creation unit 609 selects an appropriate service based on the context and user intention. *Id.* ¶¶ 44–45.

IPR2021-01209
 Patent 9,152,609 B2

2. Discussion

Petitioner argues that Kim discloses every limitation of claim 1, and provides a limitation-by-limitation analysis of claims 1–5, 9, 11, 13, 14, 17–19, and 21–25 with specific citations to Kim and declaration support. Pet. 14–43 (citing various portions of Ex. 1003). It is undisputed that Kim is prior art to the ’609 patent. *See generally* PO Resp. Patent Owner argues that Kim does not disclose the following limitations in independent claim 1: (1) “operation indicators”; (2) “monitoring . . . *transparently* to the individual”; or (3) “determining an action . . . based at least in part on . . . at least one previous change in the operational state of the vehicle, wherein the at least one previous change in the operational state comprises” any of a list of enumerated transitions between operational states. *Id.* at 20–30, 33–35.¹⁰ Patent Owner also raises additional arguments as to specific claims. *See id.* at 36–47. We address the parties’ disputes and each of Patent Owner’s arguments in turn below.

a. Independent Claim 1

i. Operation Indicator

Petitioner relies on its proposed construction of “operation indicator” (which we have adopted) in arguing that Kim discloses “monitoring at least one operation indicator.” Pet. 16 (“The phrase ‘*operation indicator*’ should be construed to mean a sensor measurement determined from signals from the environment.”). According to Petitioner, Kim discloses a terminal having “‘sensor unit 110 [that] detects an external context or action using various sensors and outputs the corresponding sensor data’—(i.e., ‘*operation*

¹⁰ Only the first limitation (“operation indicators”) appears in independent claim 25. Our analysis of the dispute over whether Kim discloses “operation indicators” in the context of claim 1 applies equally to claim 25.

IPR2021-01209

Patent 9,152,609 B2

indicator’)—for example by utilizing ‘an acceleration sensor 114 for instantaneous detection of the motion state of an object by detecting dynamic forces such as acceleration, vibration, and impact.’” *Id.* (citing Ex. 1003 ¶ 136; Ex. 1005 ¶¶ 39–40, 74).

Patent Owner argues that “Petitioner’s argument . . . rests on its incorrect claim construction.” PO Resp. 20. According to Patent Owner, “[p]roperly construed, the ‘operation indicator’ limitation does not appear in Kim.” *Id.* Relying on its own proposed construction for “operation indicator” (which we have not adopted), Patent Owner argues that the “conversion” its claim construction requires “never happens in Kim.” *Id.* at 21–22; *see also* PO Sur-reply 7–9 (arguing that Kim fails to perform the conversion “operation indicator” requires).

We find that Petitioner establishes that Kim discloses the “monitoring at least one operation indicator” limitation. *See* Pet. 16. We agree with Petitioner and find Kim discloses monitoring a “sensor measurement determined from signals from the environment” (the claimed operation indicator) because it discloses sensor unit 110 that detects context or action using sensor outputs, such as output from acceleration sensor 114 that detects acceleration and vibration. *See id.*; Ex. 1003 ¶ 136; Ex. 1005 ¶¶ 39–40, 74. Monitoring and detecting acceleration or vibration in the environment using an accelerometer satisfies the “monitoring at least one operation indicator” limitation.

Patent Owner argues that Kim fails to disclose “monitoring at least one operation indicator,” but relies on its proposed construction for “operation indicator” that we reject above. *See* PO Resp. 20–22; PO Sur-reply 7–9. Patent Owner does not argue that Kim fails to disclose the limitation if we adopt Petitioner’s construction. *See* Pet. Reply 9 (“Patent

IPR2021-01209

Patent 9,152,609 B2

Owner does not dispute that Kim discloses this aspect of the ‘monitoring’ step under Petitioner’s construction of ‘operation indicator.’”); PO Resp. 20–22; PO Sur-reply 7–9.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Kim discloses the “monitoring at least one operation indicator” limitation.

ii. Transparently

Claim 1 requires “monitoring, at least one operation indicator *transparently to the individual*.” Petitioner contends that Kim discloses context recognition unit 120 that acquires signals from sensor unit 110 and estimates the context, or operational state of a vehicle, through continuous detection of changes in the user’s context. Pet. 16–17 (quoting Ex. 1005 ¶¶ 43, 74). Petitioner also argues that “the ‘terminal’ in Kim monitors information in a way that is not visible to the user, (i.e., ‘transparently to the individual’).” *Id.* at 17 (citing Ex. 1003 ¶ 137; Ex. 1005 ¶ 43).

Dr. Michalson, in his supporting testimony, states that Kim’s terminal “monitors information in a way that is not visible to the user, ‘the context recognition unit 120 of the terminal 100 acquires these . . . signals through the sensor unit 110, and estimates the context by comparing them with the pattern of the self-stored reference signals’ and can be performed entirely without user input or observation, (‘transparently to the individual’).” Ex. 1003 ¶ 137 (quoting Ex. 1005 ¶ 74).

Relying on its proposed construction for “transparently,” Patent Owner argues that Kim fails to disclose the “transparently” aspect of the limitation because it does not monitor “without requiring user interaction.” *See* PO Resp. 22–25. Patent Owner argues that neither the cited portions of Kim nor Dr. Michalson’s testimony support Petitioner’s position that Kim

IPR2021-01209

Patent 9,152,609 B2

monitors operation indicators transparently to the user. *Id.* at 22–24 (citing Ex. 1003 ¶ 137; Ex. 1005 ¶¶ 43, 74). Patent Owner concedes that Kim’s “method appears to work automatically,” but argues that it does not work transparently because it requires the user to mount Kim’s terminal in a cradle or on the dashboard in order “to receive accelerometer data indicating that the user is a driver of the vehicle.” *Id.* at 24 (citing Ex. 1005 ¶¶ 71, 73; Ex. 2001 ¶¶ 69–70). According to Patent Owner, if the user “does not take explicit action to mount the terminal, it will not determine the context and perform the appropriate action on the device.” *Id.*

In its Reply, Petitioner argues that “[u]nder the plain and ordinary meaning of ‘transparently,’ Kim discloses this limitation because it discloses a process of monitoring signals that is automatic and not visible to the user.” Pet. Reply 10. Petitioner also argues that Kim discloses monitoring without requiring user interaction as Patent Owner’s construction requires, and does not require “that its device be mounted on a dashboard” to monitor, as Patent Owner argues. *Id.* at 11 (citing PO Resp. 24). According to Petitioner, “Kim discloses that its device also monitors when ‘the user is directly carrying the terminal 200 on their body or in a bag,’” the “same scenario that Patent Owner points to in the ’609 Patent as monitoring ‘*transparently*.’” *Id.* (citing Ex. 1005 ¶ 79; PO Resp. 25).

In its Sur-reply, Patent Owner repeats its argument that Kim requires the user to interact with its terminal “to correctly monitor accelerometer data according to whether the user is a driver or passenger.” PO Sur-reply 12. Patent Owner asserts that “when a driver is using the terminal, Kim’s terminal does not even work unless the terminal is mounted.” *Id.* at 13. As to Petitioner’s argument that Kim discloses monitoring operation indicators even when a user carries the terminal on their body or in a bag, Patent

IPR2021-01209

Patent 9,152,609 B2

Owner argues that in order to “correctly monitor” data, Kim’s user must “cradle or mount the terminal” (if the user is a driver) or “keep the terminal on their body or in a bag” (if the user is a passenger), and such actions take it outside the scope of “transparently” monitoring. *Id.* at 13–14.

We find that Petitioner establishes that Kim discloses “monitoring at least one operation indicator *transparently to the individual*” and that the act of a user mounting a mobile device in a cradle does not negate this. Kim discloses continuous detection of changes in a user’s context by context recognition unit 120, which assesses the output of sensor unit 110. Ex. 1005 ¶ 43; Pet. 16–17. Petitioner also relies on credible declarant testimony that Kim’s terminal “monitors information in a way that is not visible to the user” and that context recognition unit 120 can monitor signals from sensor unit 110 “without user input or observation.” Ex. 1003 ¶ 137 (citing Ex. 1005 ¶ 74). Kim supports these statements by describing data monitoring without requiring any action by the user. *See* Ex. 1005 ¶ 74 (describing context recognition unit 120 acquiring physical signals, such as engine vibration and noise, through sensor unit 110), ¶ 79 (describing detection of vibrations by acceleration sensor 114 and noise when user directly carries terminal 200 “on their body or in a bag”).

Patent Owner argues that Kim requires user interaction that takes it outside the scope of monitoring “transparently” because the user must mount the device (if the user is a driver) or must keep the device on their person or in a bag (if the user is a passenger) for the device to work correctly. We disagree. First, as noted in our discussion of the parties’ claim construction positions, we do not read Patent Owner’s “without requiring user interaction” construction as forbidding placement of the device by a user in the correct position to monitor operation indicators. For example, Patent

IPR2021-01209

Patent 9,152,609 B2

Owner concedes that a user must interact with any device to power it on and place it in a vehicle, yet Patent Owner does not view those required user interactions with the device as the kind of user interactions that negate transparent monitoring. *See* PO Sur-reply 12 (“Indeed, in order for any electronic device or computer to function, it must be provided with power and brought to the environment where it will be used.”). Similarly, even if Kim requires a user to mount a device to monitor the correct data, merely putting the device in the correct position does not amount to the sort of user interaction that renders all subsequent monitoring of the data non-transparent.

Second, Patent Owner’s argument ignores the fact that Kim’s device appears to always monitor the output of its sensors once turned on (similar to mounting, we find turning on the device does not negate transparent operation), and therefore always monitors operation indicators when in a vehicle. *See, e.g.,* Ex. 1005 ¶¶ 74, 79. Patent Owner does not directly dispute Petitioner’s assertion that if a user does nothing but simply leave the device on their person (e.g., in a pocket) or in a bag, Kim’s device will function normally and treat the person as a passenger in the vehicle. *See* Pet. Reply 11; PO Sur-reply 14 (“If the user is a passenger, the user is required to keep the terminal on their body or in a bag.”). Patent Owner appears to assume that doing nothing—i.e., leaving a phone in a user’s pocket—may not be enough if a driver wants the device to activate certain applications that are applicable to driving, but that does not negate the fact that Kim’s device works as intended in certain situations without any user interaction with the device while it monitors sensor output.

Third, Patent Owner’s arguments assume that Kim’s device must obtain certain data to “correctly monitor accelerometer data,” such as

IPR2021-01209

Patent 9,152,609 B2

obtaining certain vibration data to indicate that a driver controls the device. *See* PO Sur-reply 12 (citing Ex. 1005 ¶ 73; Ex. 2001 ¶¶ 69–70). The claim limitation, however, merely requires “monitoring at least one operation indicator transparently” and does not specify the type of information monitored, or require that the information enable the device to discern between drivers and passengers that use the device by paying close attention to the type of vehicle vibrations picked up by a sensor. The limitation remains agnostic on these issues, and Patent Owner fails to identify any aspect of this limitation, its construction, or any other limitation in the claims that Kim fails to disclose merely because, in some embodiments, Kim enables discerning between drivers and passengers.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Kim discloses the limitation requiring “monitoring at least one operation indicator *transparently to the individual*.”

iii. Determining . . . Based On At Least One Previous Change in the Operational State of the Vehicle

Claim 1 requires “determining at least one action . . . based at least in part on: i) the one or more operational states of the vehicle and ii) at least one previous change in the operational state of the vehicle.” Ex. 1001, 11:13–18. Claim 1 further requires “wherein the at least one previous change in the operational state comprises at least one of the following: . . . a change from the vehicle engine being in an on-state to being in an off-state; . . . a change from an engine being in an is off-state to being in an on-state.” *Id.* at 11:18–30. Petitioner argues that Kim discloses these limitations. *See* Pet. 21–22.

As to determining an operational state of the vehicle, Petitioner asserts that “Kim detects ‘vibration and noise generated in the vehicle,’ . . . for

IPR2021-01209

Patent 9,152,609 B2

example the ‘terminal’ detects when a vehicle has stopped moving and determines ‘that the engine is turned off.’” Pet. 21 (citing Ex. 1003 ¶ 158; Ex. 1005 ¶¶ 73, 78). Petitioner then argues that Kim’s terminal “determines what action to take based on the observed operational state, specifically the ‘service creation unit 140 selects an appropriate service’ . . . and that service is selected ‘based on the context information recognized by the context awareness unit.’” *Id.* (citing Ex. 1005 ¶ 45). As an example, Petitioner points to Kim’s teaching that its terminal automatically switches to a navigation mode once the terminal detects vibrations indicating that the user is the driver. *Id.* at 21–22 (citing Ex. 1003 ¶ 161; Ex. 1005 ¶¶ 74–75). As to the “at least one previous change” aspect of the limitation, Petitioner argues that Kim discloses that the service provided changes based on the operational state, which Petitioner equates to determining an action. *Id.* at 22 (citing Ex. 1005 ¶ 65). Petitioner also argues that “it is possible to automatically provide a corresponding service according to changes in the service environment.” *Id.* (quoting Ex. 1005 ¶ 26 (emphasis omitted)) (citing Ex. 1003 ¶¶ 164–165). When addressing the limitation requiring at least one specific “previous change in the operational state,” Petitioner argues that Kim discloses determining an action when a vehicle changes (1) from being on to off; (2) from a moving state to stationary state; (3) from a stationary state to a moving state; and (4) from being off to on. *Id.* at 23–25.

Patent Owner argues that the limitation requires determining an action based on two different pieces of information: the operational state of the vehicle, which “requires looking at the car’s current state,” and a previous change in the operational state of the vehicle, which requires looking at “past

IPR2021-01209

Patent 9,152,609 B2

changes in the vehicle's state." PO Resp. 25–26 (citing Ex. 2001¹¹ ¶¶ 73, 80–81). Patent Owner contends that "to satisfy the 'at least one previous change in the operational state of the vehicle' limitation, the mobile device must remember a previous change in state." *Id.* at 26 (citing Ex. 1001, 4:36–39 ("The operational state determined by unit 3 are sent to unit 4 which decides what actions should be taken based on current and past operational states.")). Patent Owner asserts that its interpretation of the claims does not seek to read in any particular manner of detecting previous changes, but contends that to satisfy the limitation the system must be "aware of prior states." *Id.* at 26–27. According to Patent Owner, Kim cannot perform "actions based on previous states because it is not aware of any state other than the current state" and Kim's terminal "does not determine actions based on transitions between states." *Id.* at 27 (citing Ex. 1005 ¶¶ 74, 78; Ex. 2001 ¶ 72). Similarly, Patent Owner argues that when Kim automatically provides a service "according to changes in the service environment," it merely detects "current status changes" by looking at "*current* context" and that "Kim discloses no capability of remembering any prior state of the vehicle." *Id.* at 27–29 (citing Ex. 1005 ¶¶ 26, 42–43). As to Kim's disclosure of stored pattern data, Patent Owner argues that Kim merely compares current data to pattern data in order to determine the current vehicle state. *Id.* at 29 (citing Ex. 2001 ¶¶ 76, 84). Patent Owner also contends that Kim provides more limited functionality than the method

¹¹ Patent Owner cites to Ex. 1002 (the file history of the '609 patent) in this section of its Response, but the context and paragraph numbers cited indicate that Patent Owner intended to cite to the Cooperstock Declaration at Ex. 2001. *See* PO Resp. 25–26; Exs. 1002, 2001.

IPR2021-01209

Patent 9,152,609 B2

claimed in the '609 patent. *Id.* at 29–30 (citing Ex. 2001 ¶¶ 74, 76, 78, 80, 83).

As to the limitation requiring the “at least one previous change in the operational state comprises” any of a list of transitions between operational states, Patent Owner argues that Petitioner fails to establish that Kim discloses a change from a stationary state to a moving state, or vice versa. PO Resp. 33–35.

Petitioner argues that Kim expressly discloses providing a “corresponding service according to changes in the service environment,” and providing a service “according to changes” means that Kim detects “previous changes” as the claim requires. Pet. Reply 11–12 (citing Ex. 1005 ¶ 26). Petitioner also argues that claim 1 specifies several “changes” that fall within the scope of “previous changes,” including a change from a vehicle on to off state, and Kim discloses detecting when “the engine is *turned off*—*i.e.*, a change from on to off”—rather than merely detecting “that an engine *is off*.” *Id.* at 12 (emphasis added) (citing Ex. 1005 ¶ 78). Petitioner rejects Patent Owner’s argument that Kim’s device must detect state transitions or pinpoint the moment a change occurs and take an action based on the specific transition because, in Petitioner’s view, Patent Owner improperly injects these requirements into the claim. *Id.* at 12–13 (citing PO Resp. 28). Petitioner further contends that Patent Owner improperly attempts to argue that the '609 patent “requires a memory of past changes,” but the claim does not place any timing requirement on the “previous change” and Kim discloses comparing current data to stored pattern data. *Id.* at 13–14 (citing Ex. 1005, claim 13; Inst. Dec. 21–22; PO Resp. 26). According to Petitioner “[b]y requiring (1) selecting a service or ‘action’ based on the identified context or ‘state’ and (2) adjusting that ‘action’ based

IPR2021-01209

Patent 9,152,609 B2

on an observed change in ‘state,’ Kim discloses using both an observed ‘state’ and a ‘previous change in state’ to determine an action.” *Id.* at 14 (citing Ex. 1005, claim 13). As to the limitation requiring “at least one previous change in operational state” from a list of specific changes, Petitioner argues that Patent Owner never contests its assertion that Kim discloses detecting changes from an engine on to off state and vice versa, and the claim requires only one of the listed changes. *Id.* at 14–15.

In its Sur-reply, Patent Owner emphasizes that the claim requires determining an action based on operational states and a previous change, and argues that “Petitioner’s argument would render the first determining step meaningless as both would simply require determining the vehicle’s current state.” PO Sur-reply 15–16 (citing Ex. 1001, 11:13–18; Ex. 2001 ¶¶ 72–81). Patent Owner further contends that “[e]ven if Kim did detect changes in state, it does not disclose determining an action based on at least one ‘previous’ change in the operational state of the vehicle” because “a previous change in state refers to a change that occurred prior to the most recent change.” *Id.* at 16.

Based on our review of the arguments and evidence, Petitioner establishes that Kim discloses “determining at least one action . . . based at least in part on: i) the one or more operational states of the vehicle and ii) at least one previous change in the operational state of the vehicle wherein the at least one previous change in the operational state comprises . . . a change from the vehicle engine being in an on-state to being in an off-state; . . . [and] off-state to being in an on-state.”

We begin by addressing the aspects of these limitations that Patent Owner does not contest. As to determining an action based on an operational state of the vehicle, Petitioner correctly points out that Kim

IPR2021-01209

Patent 9,152,609 B2

discloses determining operational states, such as sensing vibrations to indicate that a vehicle has stopped moving and that an engine has been turned off, and then taking an action based on that operational state.

Ex. 1005 ¶¶ 45, 73–75, 78; Pet. 21–22; Ex. 1003 ¶¶ 158, 160–161. The actions taken include selecting a service based on the context recognized by Kim’s terminal, such as providing a navigation service after detecting vibrations that indicate the user is driving the vehicle. *See* Ex. 1005 ¶¶ 45, 73–75; Pet. 21–22; Ex. 1003 ¶ 160–161. Patent Owner does not argue that Kim fails to disclose this aspect of the limitation. *See* PO Resp. 25–30 (focusing on the “previous change” aspect of the limitation).

As to the limitation requiring the “at least one previous change in the operational state comprises” any of a list of transitions between operational states, we agree with Petitioner that Kim discloses two of the changes listed in claim 1—“a change from the vehicle engine being in an on-state to being in an off-state” and a “change from an engine being in an is off-state to being in an on-state.” *See* Pet. 23–25. Kim states that it detects when an engine is on by sensing vibrations from inside the vehicle and also detects “when the vehicle 200 reaches the destination and it is detected that the engine is turned off.” Ex. 1005 ¶¶ 41, 78; Ex. 1003 ¶ 170; Pet. 23–24. That same information allows Kim’s system to detect when the engine is off and when vibrations indicate that the engine is on, or that Kim’s terminal is travelling, which also indicates that the engine is on. Ex. 1005 ¶¶ 33, 41, 78; Ex. 1003 ¶ 173; Pet. 24–25. These disclosures of Kim, combined with the supporting credible declarant testimony, establish that Kim discloses two of the listed changes in claim 1. *See id.* Petitioner need only establish that Kim discloses “at least *one*” of the listed changes. *See* Ex. 1001, 11:18.

Petitioner also alleges that Kim discloses detecting a change from a vehicle

IPR2021-01209

Patent 9,152,609 B2

moving to a stationary state, and vice versa, but we need not reach whether Kim discloses those aspects of the claim, or Patent Owner's related arguments, given that Petitioner already establishes that Kim discloses two of the listed changes. *See* Pet. 24; PO Resp. 33–35. Patent Owner does not address or contest Petitioner's assertions that Kim discloses when a vehicle changes from being on to off and vice versa. *See* PO Resp. 33–35.

The parties dispute whether Kim also discloses determining an action based in part on “at least one previous change in the operational state of the vehicle.” Kim expressly discloses automatically providing a “corresponding service according to *changes* in the service environment.” Ex. 1005 ¶ 26 (emphasis added); Pet. Reply 11–12. Providing a service “according to changes” in the device's environment strongly supports Petitioner's argument that Kim discloses determining an action based on previous changes in operational state, and is also supported by Dr. Michalson's related declarant testimony. *See* Pet. Reply 11–12 (citing Ex. 1005 ¶ 26); Ex. 1003 ¶ 164 (citing Ex. 1005 ¶¶ 26, 65). The claim refers to determining an action based in part on a “*previous change*,” which covers changes that take place prior to determining the action. In our Institution Decision, we noted our agreement “with Patent Owner that the term ‘previous change’ refers to a change that already occurred,” but we declined to “place any further timing restrictions on the timing of the ‘previous change.’” Inst. Dec. 21. We see no reason to depart from that approach here.

The remainder of claim 1, referring to a list of specific changes that fall within the scope of “previous change,” further supports our reading of “previous change.” *See* Ex. 1001, 11:18–19 (“wherein the at least one pervious change in the operational state comprises . . .”). The recited changes do not suggest that “previous” means anything more than a change

IPR2021-01209

Patent 9,152,609 B2

that occurs prior to determining an action to take after the change. *See id.* at 11:18–32. For example, as noted above, the claim covers determining an action based in part on “a change from the vehicle engine being in an on-state to being in an off-state,” and vice versa, and Kim discloses determining an action (e.g., providing a service based in part on the detected change) *after* detecting such a change. *See, e.g.*, Ex. 1005 ¶¶ 26 (taking actions based on sensed environment), 41 (sensing vibrations to determine vehicle’s status), 74–75 (taking an action based on sensed environment), 78 (detecting change from vehicle engine on to “turned off”). The claim requires no more.

Patent Owner raises several arguments, but none of those arguments persuade us that Petitioner fails to meet its burden as to this limitation. For example, Patent Owner argues that the “previous change” limitation requires a mobile device to “remember a previous change in state” and be “aware of prior states,” and that “a previous change in state refers to a change that occurred prior to the most recent change.” PO Resp. 26–30; PO Sur-reply 16. Nothing in the claim language refers to these more specific requirements identified by Patent Owner. Certainly nothing in the claim suggests that the claimed method requires storing previous changes in memory or picking the older of two prior changes, as Patent Owner’s arguments suggest. In its Response, Patent Owner has not provided any argument in support of any specific construction of “previous change” or cited to any aspects of the Specification that would support a narrower reading of the claim than we applied in our Institution Decision. *See* PO Resp. 25–30. Patent Owner again only points to a single sentence in the Specification that does not refer to a “change” much less shed light on what the claim means by “previous change.” *See id.* at 26 (citing Ex. 1001, 4:36–39); Ex. 1001, 4:36–39 (“The operational state determined by unit 3 are sent

IPR2021-01209

Patent 9,152,609 B2

to unit 4 which decides what actions should be taken based on current and past operational states.”).

We also disagree with Patent Owner’s contention that Kim only assesses the “current state” of the device and that Kim’s terminal “does not determine actions based on transitions between states.” PO Resp. 27 (citing Ex. 1005 ¶¶ 74, 78; Ex. 2001 ¶ 72). Because Kim expressly discloses taking actions based on “*changes* in the service environment,” with any change necessarily occurring prior to determining and taking the action based on that change, Kim does not merely disclose a system that monitors a current state, without taking actions based on transitions between states. Ex. 1005 ¶ 26 (emphasis added). Similarly, we disagree with Patent Owner’s argument that our approach would render the step requiring determining an action based in part on an operational state of the vehicle “meaningless” because both steps “would simply require determining the vehicle’s current state.” PO Sur-reply 15–16 (citing Ex. 1001, 11:13–18; Ex. 2001 ¶¶ 72–81). We do not view determining an action based on a previous change as satisfied by merely monitoring a “current state.” Finally, when viewing the competing declarant testimony on these issues, we find Petitioner’s declarant testimony from Dr. Michalson more credible because it more accurately tracks the claim requirements. *Compare* Ex. 1003 ¶¶ 158, 160–161, 164–165, 170, 173, *with* Ex. 2001 ¶¶ 72–86.

Based on the foregoing, we find that Petitioner establishes by a preponderance of the evidence that Kim discloses the limitation requiring “determining at least one action . . . based at least in part on: i) the one or more operational states of the vehicle and ii) at least one previous change in the operational state of the vehicle wherein the at least one previous change in the operational state comprises at least one of the following: . . . a change

IPR2021-01209

Patent 9,152,609 B2

from the vehicle engine being in an on-state to being in an off-state; . . . a change from an engine being in an is off-state to being in an on-state.”

iv. Conclusion

We address all of the arguments Patent Owner raises with respect to claim 1 above, and find that Petitioner establishes that Kim discloses those limitations. We have also reviewed Petitioner’s arguments and evidence as to the undisputed limitations of claim 1 and find that Petitioner establishes that Kim discloses these limitations for the reasons provided by Petitioner. *See* Pet. 14–25. We need not set forth formal findings as to the undisputed assertions by Petitioner.¹² We adopt Petitioner’s arguments and evidence as to these limitations as our own. *See id.*

b. Independent Claim 25

Independent claim 25, an apparatus claim, includes several of the same elements as claim 1, including “operational indicators.” *Compare* Ex. 1001, 11:2–33 (claim 1) *with* 14:17–42 (claim 25). In addition to their arguments in regards to claim 1, the parties raise new arguments with regards to the limitations of claim 25 that differ from claim 1, which include “whereby the one or more operating indicators are generated without any connection to other apparatuses in the vehicle and outside the vehicle.” *Id.* at 14:39–41 (“whereby clause”). Petitioner argues that Kim discloses each

¹² *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations (such as fusion apertures or anti-migration teeth) are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board, having found the only disputed limitations together in one reference, was not required to address undisputed matters.”); Paper 9, 8 (emphasizing that “any arguments not raised in the response may be deemed waived”).

IPR2021-01209

Patent 9,152,609 B2

of the limitations of independent claim 25. Pet. 37–43; Pet. Reply. 18–19. Petitioner addresses each limitation of claim 25 and cites to relevant portions of Kim and declarant testimony in support of its arguments. *See* Pet. 37–43 (citing Exs. 1003, 1005). For the “whereby” clause, Petitioner argues that “Kim generates ‘operating indicators’ through its sensor unit, which functions entirely with built in components.” *Id.* at 43 (citing Ex. 1003 ¶ 334; Ex. 1005 ¶ 40). According to Petitioner, Kim’s built-in components include a camera that records images, a microphone that detects voice and sound, and an acceleration sensor that detects motion and dynamic forces such as acceleration, vibration, and impact. *Id.* Petitioner further contends that “the one or more operating indicators” lacks antecedent basis but likely refers to “operation indicators,” and that Kim’s terminal generates these indicators “without connecting to other apparatuses.” *Id.* (citing Ex. 1003 ¶ 334).

Patent Owner argues that Kim does not disclose the “whereby” clause and Petitioner attempts to fill the gap with an unsupported inherency argument. *See* PO Resp. 46–47. According to Patent Owner, “Petitioner offers no evidence that it is ‘inevitable’ that a camera, microphone, or acceleration sensor will not be connected to other apparatuses in the vehicle.” *Id.* at 47. According to Patent Owner, “Kim’s ‘terminal’ containing these sensors sometimes *is* connected to other apparatuses in the car” because, “in order to detect whether the user is a driver, the terminal must be directly connected to a cradle or mount—i.e., an ‘apparatus’—that is attached to the vehicle.” *Id.* (citing Ex. 1005 ¶ 73).

In its Reply, Petitioner repeats its argument that “Kim discloses a terminal that generates operation indicators based on components internal to that terminal,” i.e., Kim’s various sensors. Pet. Reply 18–19 (citing

IPR2021-01209

Patent 9,152,609 B2

Ex. 1003 ¶ 334; Ex. 1005 ¶ 40). Petitioner contends that this argument “is not an ‘inherency argument’” because Kim discloses “using nothing but these internal components.” *Id.* (citing PO Resp. 47).

In its Sur-reply, Patent Owner argues that Kim relies on more than its internal sensors because “Kim’s terminal must be directly connected to a cradle or mount—i.e., an ‘*apparatus*’ that is attached to the vehicle— in order to attempt to infer whether the user is a driver.” PO Sur-reply 20 (citing Ex. 1005 ¶ 73).

We find that Petitioner establishes that Kim discloses the “whereby” clause. Kim discloses generating operating indicators “without any connection to other apparatuses in the vehicle and outside the vehicle” because Kim’s sensors generate such indicators regardless of whether connected to any other apparatus. *See* Ex. 1005 ¶ 40; Ex. 1003 ¶ 334. Petitioner does not, and need not, rely on inherency to establish that Kim’s sensors generate the operating indicators without connection to any other apparatus. *See* Pet. Reply 18–19. While Patent Owner argues that “Kim’s terminal must be directly connected to a cradle or mount . . . to attempt to infer whether the user is a driver,” that argument misses the mark. *See* PO Sur-reply 20. Even if we accept that, in one specific situation, connecting Kim’s terminal to a cradle or mount enables additional functionality of Kim’s terminal, that does not negate the fact that Kim’s sensors already produce the required operating indicators without the need to connect the terminal to any other apparatus. *See* Ex. 1005 ¶ 40 (disclosing functionality of Kim’s sensors); Ex. 1003 ¶ 334 (explaining that Kim’s sensors are not connected to other apparatuses). Based on Kim’s disclosure and Dr. Michalson’s supporting testimony, we discern that Kim’s sensors produce

IPR2021-01209

Patent 9,152,609 B2

the operating indicators regardless of whether the terminal is placed in a cradle or mount.

Accordingly, we are persuaded by Petitioner's arguments and evidence, and find that Petitioner establishes that Kim discloses "whereby the one or more operating indicators are generated without any connection to other apparatuses in the vehicle and outside the vehicle." With the exception of the "operation indicator" arguments we find unpersuasive for the reasons provided in our analysis of those limitations in the context of claim 1, and claim 25's "whereby" clause addressed immediately above, Patent Owner does not raise any additional arguments against the limitations of claim 25. We have reviewed Petitioner's arguments and evidence as to the remaining, undisputed limitations of claim 25 and find that Petitioner establishes sufficiently that Kim discloses these limitations for the reasons provided by Petitioner. We adopt Petitioner's arguments and evidence as to these limitations as our own. *See* Pet. 37–43. Because Kim discloses all of the limitations of claim 25, we find that Petitioner establishes by a preponderance of the evidence that Kim anticipates claim 25.

c. Dependent Claim 4

Claim 4 ultimately depends from claim 1 and further requires "wherein the at least one action is: detecting at least one of the following type indicators: at least one location point of the portable device over time and an altitude of the portable device." Ex. 1001, 11:48–51. Petitioner argues that Kim's terminal "is capable of entering an 'outdoor service mode' by detecting the location of the user after the user has left the car" and provides "context-aware services" (i.e., takes an action) based on entering the outdoor service mode. Pet. 27–28 (citing Ex. 1005 ¶ 84). According to Petitioner, Kim discloses the determination of an outdoor service mode

IPR2021-01209

Patent 9,152,609 B2

based on the user's GPS location information and walking motion detected from its acceleration sensor, meeting the claim limitation requiring "at least one location point of the portable device over time." *Id.* at 28 (citing Ex. 1003 ¶ 194; Ex. 1005 ¶ 84).

Patent Owner argues that Kim does not disclose indicators that include "at least one location point of the portable device over time." PO Resp. 36. Patent Owner raises three points in support of its argument: (1) Kim's detection of walking outdoors does not disclose the claimed "location point" of the device, and instead merely "detects the *type* of area that the user is in"; (2) Kim's device does not disclose performing an action when the device "is located inside a vehicle" as claim 1 requires, and from which claim 4 depends, due to Petitioner's reliance on Kim's device outside of a vehicle; and (3) Kim's device does not detect location information "over time" as the claim requires because detecting an outdoor context in Kim does not involve detecting a location over time. *Id.* at 36–37 (citing Ex. 1005 ¶ 84).

Petitioner replies that Kim uses location information provided by GPS, which collects the required "location point" "over time" while walking outdoors, as the claim requires. Pet. Reply 15 (citing Ex. 1003 ¶¶ 194–196; Ex. 1005 ¶ 84). As to the "inside a vehicle" aspect of claim 1, Petitioner argues that the claim only requires a device "inside a vehicle" when monitoring operation indicators, and that claim 1 does not require taking an action "while the device is inside a vehicle." *Id.* (citing Ex. 1001, claims 1 and 4).

In its Sur-reply, Patent Owner continues to argue that detecting a user walking outdoors does not amount to detecting a specific location point of Kim's terminal. PO Sur-reply 17. Patent Owner also takes issue with

IPR2021-01209

Patent 9,152,609 B2

Petitioner’s reading of claim 1, which Patent Owner contends requires determining an action based on the operational state of the vehicle, which in turn requires knowledge of predetermined criteria related to operation indicators obtained from inside the vehicle. *Id.* According to Patent Owner, “Kim’s disclosure of performing actions based on information that is monitored while the user is walking outside does not satisfy that limitation.” *Id.*

As an initial matter, we agree with Petitioner’s reading of claim 1, which requires monitoring operational indicators that are created when the device “is located inside a vehicle,” but does not require further steps, including determining an action, to be taken when the device is located inside a vehicle. *See* Ex. 1001, 11:4–33. Similarly, claim 4 does not require “detecting at least . . . one location point of the portable device over time” from inside the vehicle. *See id.* at 11:48–51. Accordingly, the fact that Petitioner relies on actions taken by Kim’s device when it is located outside a vehicle does not, by itself, indicate that Kim’s device fails to meet any limitation of claims 1 or 4.

As to whether Kim discloses “detecting ‘at least one location point of the portable device over time,’” we agree with Petitioner that Kim discloses this limitation. *See* Pet. 27–28 (citing Ex. 1003 ¶ 194; Ex. 1005 ¶ 84). Kim discloses detecting whether a user is walking outdoors using, in part, “location information received through the GPS 113 of the sensor unit 110 attached to the terminal 100.” Ex. 1005 ¶ 84. Tracking a device using GPS location data involves detecting the location of the device over time. *See id.* Petitioner supports its arguments with credible testimony interpreting Kim in a manner consistent with the claim requirements, while Patent Owner’s

IPR2021-01209

Patent 9,152,609 B2

interpretation of Kim relies on insufficiently supported attorney argument. *See* Ex. 1003 ¶¶ 194–196; PO Resp. 36–37; PO Sur-reply 17.

Based on the foregoing, we are persuaded by Petitioner’s arguments and evidence, and find that Petitioner has established by a preponderance of the evidence that Kim anticipates claim 4.

d. Dependent Claim 5

Claim 5 depends from claim 4 and further requires “determining that the individual is a driver of the vehicle based at least in part on acceleration, forces, velocity, the at least one location point, and time.” Petitioner argues that Kim’s terminal “detects when the user is in the driver’s seat of the vehicle when the terminal ‘is generally fixed to a cradle or mounted on a dashboard’ and then ‘detect[s] a unique pattern of vibration and noise generated in the vehicle’ and subsequently ‘infer that the user is inside the vehicle 200 and is sitting in the driver’s seat.’” Pet. 28 (citing Ex. 1003 ¶ 200; Ex. 1005 ¶ 73).

Patent Owner argues that “Kim does not anticipate claim 5 because it does not disclose the limitation of ‘determining that the individual is a driver of the vehicle based at least in part on acceleration, forces, velocity, the at least one location point, and time.’” PO Resp. 37–38 (citing Ex. 1001, 9:37–46). Patent Owner contends that Kim employs a different method than claimed and described in the ’609 patent because “Kim does not rely on kinematics at all” and instead teaches that “[w]hen the user is sitting in the driver’s seat, the terminal 100 is generally fixed to a cradle or mounted on a dashboard.” *Id.* at 38 (citing Ex. 1005 ¶ 72). According to Patent Owner, Petitioner “at most” establishes that Kim discloses determining an individual is a driver based on forces rather than the kinematics claimed and described in the ’609 patent. *Id.* at 38–39.

IPR2021-01209

Patent 9,152,609 B2

In its Reply, Petitioner emphasizes that the claim requires determining that an individual is a driver “based at least in part on” the claimed criteria, and argues that Patent Owner’s reliance on unclaimed “‘kinematics’ should be disregarded.” Pet. Reply 16 (citing PO Resp. 7–38). According to Petitioner, Kim’s disclosure of fixing its terminal to a cradle or dashboard satisfies the “location point” aspect of the limitation, while detecting unique patterns of vibration and noise meet the “acceleration, forces, and velocity” over time aspects of the limitation. *See id.*

Patent Owner replies that “Petitioner’s argument that Kim’s ‘unique pattern of vibration and noise generated in the vehicle’ is equivalent to ‘acceleration, forces, [and] velocity’ is without any support and should not be given weight.” PO Sur-reply 18 (citing Pet. Reply 16).

We agree with Patent Owner that Petitioner fails to establish that Kim’s detection of “vibration and noise” discloses the claimed “acceleration, forces, [and] velocity.” *See* Pet. Reply 16. Petitioner fails to establish how detecting “noise” satisfies any of the requirements of claim 5, and the issue turns on whether Kim’s detection of “vibrations” alone amounts to detecting “acceleration, forces, [and] velocity.” Petitioner and its declarant cite only to Kim’s paragraph 73 for support, and that paragraph refers to acceleration sensor 114 detecting a unique pattern of vibrations to help determine whether the user is in the driver’s seat, without using the terms “acceleration,” “forces,” and “velocity.” Pet. 28 (citing Ex. 1003 ¶ 200; Ex. 1005 ¶ 73); Ex. 1003 ¶ 200; Ex. 1005 ¶ 73. Even assuming that Kim’s vibrations indicate some force over time, claim 5 also requires “determining that the individual is a driver of the vehicle *based* at least in part on acceleration . . . [and] velocity,” and Petitioner’s argument and evidence fails to explain adequately how Kim determines that the individual is a

IPR2021-01209

Patent 9,152,609 B2

driver *based on* acceleration or velocity readings. *See* Ex. 1005 ¶ 73.

Accordingly, Petitioner fails to establish that Kim discloses “determining that the individual is a driver of the vehicle *based* at least in part on *acceleration*, forces, *velocity*, the at least one location point, and time.”

Based on the foregoing, we find that Petitioner has not established by a preponderance of the evidence that Kim anticipates claim 5.

e. Dependent Claim 13

Claim 13 depends from claim 1 and further recites: “wherein the one or more predetermined criteria are based at least on one or more previously determined operational states.” Ex. 1001, 12:14–16. Petitioner argues that Kim discloses detecting when driving stops and the user exits a vehicle, “and therefore recognizes the previous operational state of driving before the vehicle stopped” in a manner that satisfies the “previously determined operational states” aspect of claim 13. Pet. 30 (citing Ex. 1005 ¶ 82). Petitioner contends that Kim’s terminal detects the prior operational state using a microphone and acceleration sensors that “indicate a stopped vehicle . . . based on a change from a vehicle’s prior state of driving,” which satisfies the “predetermined criteria” and “based at least on one or more previously determined operational states” limitations. *Id.* (citing Ex. 1005 ¶ 84). Petitioner also asserts that “Kim discloses using previously entered data to determine a current state, and that ‘the pattern data previously entered by the user may comprise pattern data corresponding to the context in which the user is driving.’” *Id.* at 30–31 (citing Ex. 1003 ¶¶ 240–244; Ex. 1005 ¶ 42).

Patent Owner argues that Petitioner’s argument fails to address the “predetermined criteria” aspect of the limitation because mere signals from a microphone or acceleration sensor “are not *themselves* ‘predetermined

IPR2021-01209

Patent 9,152,609 B2

criteria.” PO Resp. 39–40 (citing Ex. 1005 ¶ 42; Pet. 30). Patent Owner also contends that Kim’s “disclosure says nothing about what ‘predetermined criteria’ are ‘based on’ and that “Petitioner must point to a portion of Kim setting forth *the basis* for predetermined criteria” rather than “[m]erely asserting that Kim’s terminal analyzes signals.” *Id.* at 40. Patent Owner further asserts that Kim’s disclosure does not show how any determinations are based on the claimed “previously determined operational states” as the claim requires because Kim’s terminal remains unaware of such states and instead simply monitors “currently incoming” signals from sensors. *Id.* As to Petitioner’s reliance on Kim’s ability to detect when a vehicle stops, Patent Owner argues “that does not show that the predetermined criteria are based on the previously determined state” rather than currently received signals. *Id.* As to Petitioner’s reliance on user-entered pattern data, Patent Owner argues that “[t]he context associated with the pattern data is not ‘previously determined’ at all” because the user must input the pattern data for the service to work. *Id.* at 40–41 (citing Ex. 1005 ¶ 42; Pet. 30–31); *see also* PO Sur-reply 18 (same).

Petitioner replies that “Kim discloses ‘the pattern data previously entered by the user may comprise pattern data corresponding to the context in which the user is driving.’” Pet. Reply 16 (citing Ex. 1003 ¶¶ 240–244; Ex. 1005 ¶ 42). According to Petitioner, this aspect of Kim discloses using “previously determined operational states” as “predetermined criteria” as the claim requires. *Id.*

As an initial matter, we agree with Patent Owner that mere current signals from sensors, such as the output of a microphone or accelerometer, do not amount to “predetermined criteria.” *See* Pet. 30; PO Resp. 39–40. Current sensor output more closely corresponds to the operation indicators

IPR2021-01209

Patent 9,152,609 B2

of claim 1, while stored pattern data used as a reference point when analyzing the current sensor output corresponds to predetermined criteria, as Petitioner points out in its analysis of claim 1. *See* Pet. 16 (operation indicators corresponding to sensor output), 18–20 (predetermined criteria corresponding to stored pattern of reference signals) (citing in part Ex. 1005 ¶ 42). For claim 13, we do not read Petitioner’s argument as based on sensor output or determining whether a vehicle stopped in isolation, as Patent Owner suggests. *See* PO Resp. 39–40. Instead, Petitioner argues that the sensor data may “indicate” a previous operational state and uses Kim’s stored pattern data as an “example” of how to use predetermined criteria based on previously determined operational states. *See* Pet. 30–31 (citing Ex. 1003 ¶¶ 240–244; Ex. 1005 ¶¶ 42, 82, 84); Pet. Reply 16.

As to whether Kim discloses using predetermined criteria, we address Kim’s use of stored pattern data. *See* Ex. 1005 ¶ 42; Pet. 30–31; Pet. Reply 16. Kim’s paragraph 42 describes using a context recognition unit that “estimates an external context or a user’s behavior by comparing the sensor data sensed through the sensor unit 110 with a pattern of reference signals stored therein.” Ex. 1005 ¶ 42. The context recognition unit stores “pattern data of reference signals corresponding to a various contexts previously input by a user” that “may comprise pattern data corresponding to the context in which the user is driving” such as pattern data that may differ based on where the user sits within a car or if the user left the car (e.g., a driver versus a passenger in the rear of the car, or a user walking). *Id.* By comparing current sensor data with this previously stored pattern data, the context recognition unit can determine where the user sits within the car, or whether they are walking outside the car. *Id.* We agree with Petitioner that Kim’s stored pattern data discloses “predetermined criteria” as required by

IPR2021-01209

Patent 9,152,609 B2

claim 13. *See id.* Pet. 30–31; Pet. Reply 16. This comports with our conclusion that Petitioner establishes that Kim discloses the “predetermined criteria” required by claim 1. *See* Pet. 19–20 (arguing that Kim’s terminal “detects the state of a user (or vehicle) by comparing sensor data with predetermined patterns”) (relying on Kim’s paragraph 42).

As to whether Kim’s stored pattern data amounts to predetermined criteria “based on previously determined operational states,” we first address the meaning of the limitation. Claim 1 requires “determining one or more operational states of the vehicle based on the one or more predetermined criteria,” while claim 13 requires predetermined criteria “based at least on one or more previously determined operational states.” The “previously determined operational states” appears to refer back to the operational states referred to in claim 1. Neither party provides any proposed construction for the limitation in claim 13, or cites to any portion of the Specification as shedding light on its scope. *See* Pet. 30–31; PO Resp. 39–41. The Specification indicates that vehicle “operational states” include engine on or engine off states as well as moving or stationary states, among others. *See* Ex. 1001, 4:21–28. The Specification also describes using pattern recognition techniques to recognize the state of the vehicle by labeling certain vibration outputs as corresponding to one of the operational states. *See id.* at 5:30–43. For example, vibrations indicating that a user is walking with a device may be labelled “vehicle is stationary” or “engine is off” because walking with the device indirectly supports this conclusion. *See id.* at 4:25–28; 5:37–43.

With this background in hand, we turn to Kim’s disclosure. Kim discloses a pattern recognition approach similar to that described in the ’609 patent. For example, Kim employs a pattern of stored reference signals

IPR2021-01209

Patent 9,152,609 B2

that correspond to known contexts, such as vibrations that indicate whether a “user is driving” a car or is “walking” outside a car. *See* Ex. 1005 ¶ 42.

These contexts also indicate an operational state of the vehicle because an engine must be on while being driven, and a car may be deemed “stopped” as Petitioner alleges, when walking is detected. *See id.* at ¶¶ 42, 82, 84; Pet. 30; *see also* Pet. 20–21 (referring to operational states in the context of claim 1, including when “the engine is turned off” and the comparison of current sensor signals with the pattern of stored signals) (citing Ex. 1003 ¶¶ 153, 155; Ex. 1005 ¶¶ 73–74, 78); Ex. 1001, 4:25–28, 5:37–43 (detecting a user walking and determining that vehicle is stationary); Ex. 1003 ¶¶ 242–244. Given that Kim’s predetermined criteria in its stored patterns correspond to operational states of the vehicle, and the similarity between Kim’s approach and that described in the ’609 patent, we find that Petitioner establishes that Kim discloses predetermined criteria “based at least on one or more previously determined operational states.”

Patent Owner’s arguments do not persuade us that Petitioner fails to make an adequate showing here. First, as noted above, Patent Owner mischaracterizes Petitioner’s argument as based on the notion that current sensor output alone amounts to predetermined criteria. *See* PO Resp. 39–40. Second, contrary to Patent Owner’s argument, Kim adequately sets forth the basis for its predetermined criteria and those criteria, such as vibrational output, correspond to operational states of the vehicle. *See id.* at 40; Ex. 1005 ¶ 42. Third, Patent Owner argues that “[m]erely asserting that Kim’s terminal analyzes signals says nothing about what predetermined criteria are based on.” But Petitioner does not merely assert that Kim’s terminal analyzes current signals, Petitioner specifically refers to the stored pattern data. *See* PO Resp. 40; Pet. 30–31; Pet. Reply 16. Patent Owner

IPR2021-01209

Patent 9,152,609 B2

also fails to identify anything in the “based on” claim language or the Specification that would support a narrower reading that excludes Kim’s predetermined criteria. *See* PO Resp. 40. Fourth, Patent Owner takes issue with Petitioner’s reliance on user-input pattern data, apparently assuming that the user’s involvement in creating the pattern database prevents it from being based on “previously determined operational states.” *Id.* at 40–41. Again, Patent Owner does not support its argument with reference to specific claim language or guidance from the Specification that would suggest a user cannot be involved in creating a database used in a pattern recognition system.

Based on the foregoing, we are persuaded by Petitioner’s arguments and evidence, and find that Petitioner has established by a preponderance of the evidence that Kim anticipates claim 13.

f. Dependent Claim 14

Claim 14 depends on claim 1 and further recites “wherein the determining the one or more actions based on the one or more operational states of the vehicle comprises: changing a previously determined operational state based on the one or more predetermined criteria.” Ex. 1001, 12:17–21. Petitioner asserts that Kim’s terminal “detects when the user is ‘sitting in the driver’s seat,’ (i.e. ‘a previously determined operational state’)” and then the terminal detects “when the driving is stopped and the user comes out of the vehicle” based on signals from . . . the sensor unit 110 (i.e., one or more predetermined criteria).” Pet. 31 (citing Ex. 1003 ¶¶ 246–247; Ex. 1005 ¶¶ 75, 82). Petitioner also contends that Kim detects when a user is outside the vehicle and moving, and provides context-aware services based on the user’s location. *Id.* (citing Ex. 1003 ¶ 247; Ex. 1005 ¶ 82).

IPR2021-01209

Patent 9,152,609 B2

Patent Owner argues that claim 14 “requires a portable device to change its determination about a vehicle’s prior operational state based on updated information.” PO Resp. 41–42 (citing Ex. 1001, 6:7–16). Patent Owner contends that Petitioner fails to establish that Kim discloses this limitation and that Kim fails to remember what a previously determined operational state is, and instead takes action based on the current state. *Id.* at 42 (citing Pet. 31). Patent Owner also contends that Kim “does not disclose retroactively ‘*changing*’ a previously determined operational state.” *Id.* at 42–43. As to Petitioner’s reliance on Kim’s paragraph 82, Patent Owner argues that Kim requires the use of GPS data to determine a user’s new context rather than any predetermined criteria. *Id.* at 43 (citing Ex. 1005 ¶ 82).

Petitioner replies that “Kim discloses determining operational states, such as ‘the user is sitting in the driver’s seat’ and updating the detected operational state when a new one is detected, such as ‘when the driving is stopped and the user comes out of the vehicle’ and thus discloses ‘changing a previously determined’ state.” Pet. Reply 17 (citing Ex. 1005 ¶¶ 75, 82).

In its Sur-reply, Patent Owner argues that Petitioner fails to “show that Kim ever changes a state that was previously determined.” PO Sur-reply 19. Patent Owner also argues that Kim’s recognition of “a new current state is not the same as ‘changing a previously determined operational state.’” *Id.*

We start with our understanding of claim 14. Claim 14 refers to “changing a previously determined operational state,” which suggests determining a first operational state based on predetermined criteria, and then determining a different operational state, requiring a “change” to the “previously determined operational state.” We do not agree with Patent

IPR2021-01209

Patent 9,152,609 B2

Owner that claim 14 in effect requires a device that “remembers” a previously determined operational state, “reconsiders any previous determination,” or “retroactively” alters a “predetermined state.” PO Resp. 42–43. The claim merely refers to changing a determination, which includes a change from one determined operational state to another without storing any previous determination in memory, formally reconsidering a prior, erroneous determination, or altering a predetermined state.

Turning to Kim, we agree with Petitioner that Kim discloses determining one operational state based on sensor data indicative of a vehicle being driven (that a driver is in the driver’s seat, with navigation service initiated). *See* Ex. 1005 ¶ 75; Ex. 1003 ¶ 246; Pet. 31. Kim also discloses determining a different operational state based on different sensor data indicative of driving being stopped. Ex. 1005 ¶ 82; Ex. 1003 ¶ 247; Pet. 31. These disclosures show that Kim changes its determination of a vehicle operating state based on sensor data meeting different predetermined criteria associated with a vehicle being driven or not driven. Kim’s paragraph 82 standing alone supports this interpretation by noting that in Kim’s system “when the driving is stopped and the user comes out of the vehicle 200, the context recognition unit 120 of the terminal 100 detects this based on signals from the microphone 112, the GPS 113 and the acceleration sensor 114.” Ex. 1005 ¶ 82. In other words, Kim’s system “detects this” change from a driving operational state to a driving stopped operational state based on different predetermined criteria. *See id.* Patent Owner faults Kim’s reference to GPS in this same passage, but paragraph 82 also refers to using signals from microphone 112 and acceleration sensor 114 in its context recognition unit 120, without stating that it also requires the use of

IPR2021-01209

Patent 9,152,609 B2

GPS to determine that the driving stopped. *See* Ex. 1005 ¶ 82; PO Resp. 43 (citing Ex. 1005 ¶ 82).

Based on the foregoing, we are persuaded by Petitioner’s arguments and evidence, and find that Petitioner has established by a preponderance of the evidence that Kim anticipates claim 14.

g. Dependent Claim 17

Claim 17 depends from claim 1, and further recites “wherein the determining the one or more operational states of the vehicle further comprises: determining a position of the portable device; and determining the one or more operational states of the vehicle based on the one or more predetermined criteria and the position of the portable device.” Ex. 1001, 12:48–50. Petitioner argues that Kim discloses this limitation because it detects “when the terminal ‘is generally fixed to a cradle or mounted on a dashboard’ and detects ‘a unique pattern of vibration and noise generated in the vehicle’ in order to ‘infer that the user is inside the vehicle 200 and is sitting in the driver's seat.’” Pet. 32 (citing Ex. 1003 ¶ 273; Ex. 1005 ¶ 73); *see also* Pet. Reply 17 (“detecting when the terminal is ‘fixed to a cradle or mounted on a dashboard’” satisfies “determining a position of the portable device”).

Patent Owner argues that Kim fails to disclose “determining a position of the portable device” because “whether a terminal is ‘fixed to a cradle or mounted on a dashboard’ does not satisfy ‘determining the position.’” PO Resp. 43–44 (citing Ex. 1005 ¶ 73). According to Patent Owner, Kim’s disclosure does not determine a position because the “cradle could be attached anywhere in the car—the dashboard, windshield, ceiling, or anywhere else.” *Id.* at 44; *see also* PO Sur-reply 19 (arguing that Kim “does

IPR2021-01209

Patent 9,152,609 B2

not differentiate between being mounted on a dashboard or attached to a cradle on the vehicle's ceiling or windshield").

We find that Petitioner establishes that Kim discloses the additional limitations in claim 17, including "determining a position of the portable device." Pet. 32 (citing Ex. 1003 ¶ 273; Ex. 1005 ¶ 73). Kim discloses determining whether its terminal is "fixed to a cradle or mounted on a dashboard," consistent with the user being the driver. Ex. 1005 ¶ 73. Although Kim does not fix the position of the device with exact or precise dimensions, being fixed to a cradle or mounted to a dashboard locates the device forward of the driver's seat and generally within reach of the driver, which sufficiently amounts to a "position of the portable device." *See id.* The claim does not require any specific position or any degree of precision in its position of the device. While Patent Owner argues that Kim's device "could be attached anywhere in the car" we do not view that assertion as realistic, and fixing the position to a location in a cradle or on a dashboard in the front area of the car does not amount to an indeterminant location that fails to meet the claim requirements. We find Petitioner's argument and supporting declarant testimony interpreting Kim from the perspective of a POSITA more credible than Patent Owner's argument and evidence. *See* Pet. 32; Ex. 1003 ¶ 273.

Based on the foregoing, we are persuaded by Petitioner's arguments and evidence, and find that Petitioner has established by a preponderance of the evidence that Kim anticipates claim 17.

h. Dependent Claim 18

Claim 18 depends from claim 17 and further recites "wherein the determining of the position of the portable device comprises: determining the position of the portable device in relation to a driver's seat of the

IPR2021-01209

Patent 9,152,609 B2

vehicle.” Ex. 1001, 12:55–58. Petitioner generally relies on the same aspects of Kim for claims 17 and 18, and argues that that Kim discloses the limitations of claim 18 because “Kim notes that ‘[w]hen the user is sitting in the driver’s seat, the terminal 100 is generally fixed to a cradle or mounted on a dashboard. In this case, the acceleration sensor 114 and the microphone 112 of the sensor unit 110 attached to the terminal 100 detect a unique pattern of vibration and noise generated in the vehicle 200 (vibration pattern 1, refer to Fig. 6(a)), and infer that the user is inside the vehicle 200 and is sitting in the driver’s seat.’” Pet. 32–33 (citing Ex. 1003 ¶ 278; Ex. 1005 ¶ 73); *see also* Pet. Reply 17–18 (relying on Kim’s determination that device is mounted on a dashboard and inference that the user is in the driver’s seat).

Patent Owner argues that Kim fails to determine the position of the device “in relation to a driver’s seat of the vehicle” as claim 18 requires because Kim’s device could be mounted to various locations on the dashboard or in a cradle. PO Resp. 44–45. According to Patent Owner, “[s]imply knowing that the device is in a cradle somewhere does not explain where the device is ‘in relation to a driver’s seat of the vehicle.’” *Id.* at 45; *see also* PO Sur-reply 19 (arguing that merely determining that a device is cradled or mounted does not meet the claim requirements).

We find that Petitioner establishes that Kim discloses the additional limitations in claim 18, including “determining the position of the portable device in relation to a driver’s seat of the vehicle.” Pet. 32–33 (citing Ex. 1003 ¶ 278; Ex. 1005 ¶ 73). As noted above, Kim discloses determining whether its terminal is “fixed to a cradle or mounted on a dashboard,” consistent with the user being the driver. Ex. 1005 ¶ 73. Kim also uses vibration and noise data to “infer that the user is inside the vehicle 200 and is

IPR2021-01209

Patent 9,152,609 B2

sitting in the driver's seat.” *Id.* Fixing the device to a cradle or dashboard locates the device near the front of the car, forward of the driver's seat and generally within reach of the driver, which amounts to a “position of the portable device in relation to a driver's seat.” *See id.* The claim does not require any specific position or any degree of precision in its position of the device in relation to the driver's seat. The fact that Kim discloses determining a position that fixes it in a position generally forward of the driver's seat provides a position “in relation to a driver's seat.” While Patent Owner argues that Kim's device could be mounted in various locations on the dashboard or when using a cradle, that does not undermine Petitioner's showing that those positions also indicate a position relative to the driver's seat. We find Petitioner's argument and supporting declarant testimony interpreting Kim from the perspective of a POSITA more credible than Patent Owner's argument and evidence. *See* Pet. 32–33; Ex. 1003 ¶ 278.

Based on the foregoing, we are persuaded by Petitioner's arguments and evidence, and find that Petitioner has established by a preponderance of the evidence that Kim anticipates claim 18.

i. Dependent Claim 19

Claim 19 depends from claim 18, and further recites “wherein the determining the position of the portable device in relation to a driver's seat of the vehicle comprises: determining that the vehicle is in a moving state and the individual is a driver of the vehicle.” Ex. 1001, 12:55–58. Petitioner argues that Kim discloses “[w]hen the user is sitting in the driver's seat, the terminal 100 is generally fixed to a cradle or mounted on a dashboard. In this case, the acceleration sensor 114 and the microphone 112 of the sensor unit 110 attached to the terminal 100 detect a unique pattern of vibration and noise generated in the vehicle.” Pet. 33 (quoting Ex. 1005

IPR2021-01209

Patent 9,152,609 B2

¶ 73). Petitioner contends that this portion of Kim satisfies the portion of claim 19 requiring “the vehicle is in a moving state.” *Id.* Petitioner also argues that Kim’s terminal “infer[s] that the user is inside the vehicle 200 and is sitting in the driver's seat,” which, according to Petitioner, satisfies the portion of claim 19 requiring “the individual is a driver of the vehicle.” *Id.* (citing Ex. 1003 ¶ 284; Ex. 1005 ¶ 73).

Patent Owner argues that Petitioner’s reliance on Kim’s ability to “infer” that the user is a driver “is insufficient” because claim 19 “requires a portable device to make use of the fact that the vehicle is moving and the individual is a driver in order to determine the position of the portable device.” PO Resp. 45 (citing Ex. 1005 ¶ 73; Pet. 33). Patent Owner contends that Kim’s approach works in an opposite manner by using the location of the device (in a cradle or mounted to the dashboard) as an input to determine that the individual is the driver. *Id.* at 45–46; *see also* PO Sur-reply 20 (arguing that Kim works in the opposite way when compared to the method of claim 19).

Petitioner replies that “Kim discloses determining that the vehicle is moving, i.e. it detects ‘a unique pattern of vibration and noise generated in the vehicle’ and then determines that the user is in the driver’s seat.” Pet. Reply 18 (citing Ex. 1005 ¶ 73). According to Petitioner, “[t]hese two pieces of information may be used to infer that the terminal is ‘fixed to a cradle or mounted on a dashboard’ or the position of the portable device.” *Id.*

As an initial matter, we agree with Patent Owner that the claim requires determining a position of the device in relation to the driver’s seat using two inputs—that the vehicle is moving and the individual is a driver. *See* PO Resp. 45. In other words, the method must determine that the user is

IPR2021-01209

Patent 9,152,609 B2

a driver in order to use that information to help determine the position of the device in relation to the driver's seat. *See id.* Patent Owner correctly points out that Kim operates in the opposite manner. Kim's paragraph 73 states that "[w]hen the user is sitting in the driver's seat, the terminal 100 is generally fixed to a cradle or mounted on a dashboard." Ex. 1005 ¶ 73. Kim goes on to state that "[i]n this case," i.e., after fixing Kim's device to a cradle or dashboard, the sensors "detect a unique pattern of vibration and noise generated in the vehicle 200 . . . and infer that the user is inside the vehicle 200 and is sitting in the driver's seat." *Id.* That passage indicates that the position of the device and associated data generated in that position come first, and the determination that the user "is sitting in the driver's seat" comes later because Kim's method infers the user's seating position from the data generated when the device is in a cradle or mounted on a dashboard. *See id.* Petitioner argues that the fact that the device is moving and that the user is in the driver's seat "may be used to infer" the location of the device in the cradle or on the dashboard, but that inference does not find support in Kim's disclosure, which infers that the user is in the driver's seat. *See* Pet. Reply 18; Ex. 1005 ¶ 73. Petitioner cites to declarant testimony for support, but that testimony does not address Patent Owner's argument and fails to support Petitioner's argument that Kim's system infers the location of the device after determining that the user is the driver. *See* Ex. 1003 ¶ 284; Pet. Reply 18.

Based on the foregoing, we find that Petitioner has not established by a preponderance of the evidence that Kim anticipates claim 19.

j. Dependent Claims 2, 3, 9, 11, and 21–24

Dependent claims 2, 3, 9, 11, and 21–24 ultimately depend from claim 1. *See* Ex. 1001, 11:34–14:17. Petitioner argues that Kim anticipates

IPR2021-01209

Patent 9,152,609 B2

dependent claims 2, 3, 9, 11, and 21–24. *See* Pet. 25–27, 28–30, 33–37.

Petitioner addresses where Kim discloses each limitation in these claims, and cites to declarant testimony for support. *See id.* (citing Ex. 1003). With the exception of its arguments as to independent claim 1, Patent Owner does not address Petitioner’s argument and evidence as to claims 2, 3, 9, 11, and 21–24. PO Resp. 36.

We have reviewed Petitioner’s arguments and evidence as to the undisputed limitations of claims 2, 3, 9, 11, and 21–24 and find that Petitioner establishes that Kim discloses these limitations for the reasons provided by Petitioner. We adopt Petitioner’s arguments and evidence as to these limitations as our own. *See* Pet. 25–27, 28–30, 33–37.

*3. Conclusion as to Claims 1–5, 9, 11, 13, 14, 17–19,
and 21–25*

Based on the foregoing, we determine that Petitioner establishes that Kim discloses every limitation of challenged claims 1–4, 9, 11, 13, 14, 17, 18, and 21–25. *See* Pet. 15–30; Ex. 1003 ¶¶ 142–191. Accordingly, Petitioner has proven by a preponderance of the evidence that Kim anticipates claims 1–4, 9, 11, 13, 14, 17, 18, and 21–25. We also determine that Petitioner has not shown that Kim discloses all of the limitations of claims 5 and 19, and has not proven by a preponderance of the evidence that Kim anticipates claims 5 or 19.

E. Obviousness

Petitioner challenges claims 6–8, 10, 12, 15, 16, and 18–20 as obvious under 35 U.S.C. § 103(a) based on Kim alone or Kim in combination with other art. *See* Pet. 4, 43–68. For these challenges, Petitioner cites to the asserted references the Michalson Declaration and the Yee Declaration. *Id.*

IPR2021-01209
Patent 9,152,609 B2

We provided an overview of Kim above. We next provide an overview of the other asserted prior art and then discuss the parties' positions.

*1. Overview of the Prior Art*¹³

a. Barbera

Barbera discloses a “safety feature” that detects a user’s speed and takes an action when the user is traveling beyond a certain speed threshold. Ex. 1007, code (57). Barbera discloses that in certain embodiments “a cell phone is provided with a safety feature that is configured to prevent use of the cell phone when the user and cell phone are traveling beyond a certain speed,” and that “a variety of techniques for detecting speed may be used” including “GPS.” *Id.* at 7:55–8:21.

It is undisputed here that Barbera is prior art. *See generally* PO Resp.

b. Kohli

Kohli discloses a code GPS receiver system that tracks position information with as few as two satellites. Ex. 1013, code (57). Kohli discloses “an improved terrestrial navigation system using a GPS receiver” where “[t]he GPS data is augmented with data from another source” including “data from external sensors, data bases including map data bases, and/or knowledge of the physical environment within which the vehicle is to be navigated.” *Id.* at 2:14–26. Kohli further states that “[t]urn detection may be accomplished by monitoring changes in the vehicle vector velocity derived from changes in the GPS derived position information.” *Id.* at 3:5–9. Kohli discloses “the use of turn information for updating the last known position information.” *Id.* at 10:8–9.

¹³ Petitioner asserts, and Patent Owner does not contest, that all of the references Petitioner relies upon are prior art to the '609 patent. *See* Pet. 10, 44, 51, 56, 65.

IPR2021-01209
Patent 9,152,609 B2

It is undisputed here that Kohli is prior art. *See generally* PO Resp.

c. Mitrovic

Mitrovic discloses a “simple and reliable method for the recognition of driving events using hidden Markov models.” Ex. 1012, 198. Mitrovic discloses creating Markov models to recognize specific driving events through the analysis of driving data. *Id.* at 203. Mitrovic states that the driving data was acquired through “accelerometers, gyroscopes, and a GPS receiver.” *Id.* at 204. Mitrovic discloses that its models were trained by observing sequences for each type of driving event and that its models were able to correctly recognize 98.3% of driving events. *Id.* at 203–04.

It is undisputed here that Mitrovic is prior art. *See generally* PO Resp.

d. Rubin

Rubin discloses a method for receiving and analyzing accelerometer data from a mobile device. Ex. 1006, code (57). Rubin discloses that “acceleration profiles can be recorded by and stored in the mobile device” and that the device can “compare the real-time acceleration data with acceleration profiles stored in the mobile device.” *Id.* at 3:37–44. Rubin also states that if the real-time data matches a stored acceleration profile, the mobile device can activate a pre-set application associated with the matching acceleration profile. *Id.* at 3:44–59. Rubin discloses several example acceleration profiles, including a user who is jogging, a user on a train, and a user in various states of traffic. *Id.* at 4:38–6:13.

It is undisputed here that Rubin is prior art. *See generally* PO Resp.

2. Discussion

We begin our analysis by addressing Patent Owner’s asserted objective indicia of non-obviousness, and then turn to the merits of Petitioner’s specific obviousness challenges before us.

a. Objective Indicia of Non-obviousness

i. The Parties' Positions

Patent Owner argues that objective indicia of non-obviousness in the form of satisfaction of a long-felt but unmet need illustrates the nonobviousness of the challenged claims. PO Resp. 30–32. Patent Owner argues that there was a “long-felt but unmet need for a way to monitor changes in the operational state of a vehicle without relying on GPS or a tightly-coupled device that existed at the time of the ‘609 patent.” *Id.* at 30. Patent Owner cites several articles for the assertion that “there was a long-felt need for a method [of] utilizing a cell phone’s accelerometer to detect a vehicle’s operational state, without relying on GPS” within the usage-based insurance (“UBI”) industry. *Id.* at 31–32 (citing Exs. 2006–2009). Patent Owner contends that “[t]he ‘609 patent was able to meet this long-felt need known by the UBI industry by providing a method for utilizing the data obtained by the on-board sensors, *e.g.*, the accelerometer, of a portable device, such as a smartphone, to determine the operational state of a vehicle.” *Id.* at 32 (citing Ex. 1001, claims 1 and 25).

Petitioner argues that Patent Owner “has failed to establish a nexus between” the alleged need and “the claims of the ’609 Patent.” Pet. Reply 19–20. Petitioner argues that a patent owner is only entitled to a presumption of nexus when citing a specific product that embodies the claimed features, and that there is no evidence of such product identified here. *Id.* at 19. Petitioner further argues that the claimed use of an accelerometer was present in the prior art and that Patent Owner cannot point to prior art features to establish a nexus. *Id.* at 20. Finally, Petitioner argues that Patent Owner fails to tie specific claim limitations to the alleged long-felt need and “instead only cites generally to the claims.” *Id.*

IPR2021-01209

Patent 9,152,609 B2

In its Sur-reply, Patent Owner argues that Petitioner “does not substantively address the evidence cited by Patent Owner to show that there was an unmet need for the invention of the ’609 patent.” PO Sur-reply 15. Patent Owner argues that despite Kim’s publication in 2007, “a need continued to exist in the field of usage-based insurance as late as 2012 for a method of utilizing a smartphone’s accelerometer to detect a vehicle’s operational state without relying on GPS.” *Id.* (citing Ex. 2007).

ii. Analysis of Long Felt Need

We first address the issue of nexus between the claimed invention and Patent Owner’s objective indicia of nonobviousness and then the strength of Patent Owner’s objective indicia evidence.

Patent Owner bears the burden of establishing a nexus. *See Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). “[A] patentee is entitled to a rebuttable presumption of nexus between the asserted evidence of secondary considerations and a patent claim if the patentee shows that the asserted evidence is tied to a specific product and that the product ‘is the invention disclosed and claimed.’” *Id.* (quoting *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988)).

We agree with Petitioner that Patent Owner fails to meet its burden of establishing a nexus. Patent Owner never even mentions “nexus” in the Patent Owner Response, forfeiting its right to submit evidence and argument on the issue for the first time in its Sur-reply. *See* PO Resp. 30–32; Paper 9, 8 (emphasizing that “any arguments not raised in the response may be deemed waived”). Even after Petitioner pointed out the failure to establish a nexus in its Reply, Patent Owner does not make an attempt to remedy the

IPR2021-01209

Patent 9,152,609 B2

issue by setting forth a substantive nexus argument in its Sur-reply. *See* PO Sur-reply 15.

The substance of Patent Owner's arguments also fails to establish a nexus. First, Patent Owner never addresses whether a nexus to a claim, rather than a commercial product, can establish an adequate nexus. Second, Patent Owner never ties the alleged evidence of long-felt need to any specific claim, and only broadly cites to a number of claims without providing any analysis of those claims. *See* PO Resp. 32 (citing Ex. 1001, claims 1 and 25). In several places Patent Owner refers broadly to using an accelerometer on a smartphone to detect an operational state, but the fact that such language may track one or two of the many limitations in each independent claim does not establish a nexus to any of the challenged claims. *See id.* at 31–32; PO Sur-reply 15. Although a limitation-by-limitation analysis may not be required to establish a nexus to a claim, Patent Owner must do more than merely paraphrase a limitation or two from the challenged claims. Moreover, the fact that Kim already discloses the use of accelerometers in smartphones to detect a vehicle's operational state only underscores the need for more argument and evidence from Patent Owner to make a colorable nexus showing here. *See* Pet. Reply 20.

Based on the foregoing, we find that Patent Owner fails to establish a nexus and therefore fails to establish that any alleged evidence of objective indicia supports a finding of non-obviousness. Accordingly, we give Patent Owner's reliance on objective indicia of non-obviousness no weight in our obviousness analysis.

b. Kim and Rubin – Dependent Claims 6–8 and 15

Claims 6–8 and 15 ultimately depend from independent claim 1. Petitioner argues that claims 6–8 and 15 would have been obvious over Kim

IPR2021-01209

Patent 9,152,609 B2

and Rubin. Pet. 43–49. Patent Owner relies on its arguments as to claim 1 for claims 6–8 and 15, and raises additional arguments specific to claims 6 and 7. We address each of these challenged claims and related arguments in turn below.

i. Dependent Claim 6

Claim 6 depends on claim 4 and further requires “determining a type of the vehicle, wherein the type of the vehicle is one of the following: a taxi; a bus; a carpool; and a train.” Ex. 1001, 11:56–60. Petitioner asserts that the combination of Kim and Rubin satisfies all limitations of claim 6.

Pet. 43–47. Petitioner asserts that Rubin discloses the limitations of claim 6, and that it would have been obvious “to include the functionality of ‘determining a type of vehicle’ in the portable device of Kim in view of [Rubin].” *Id.* at 44 (citing Ex. 1003 ¶ 98). As to the portion of claim 6 requiring “determining a type of the vehicle,” Petitioner asserts that Rubin discloses using “acceleration data pattern matching to detect when a user is riding in different vehicles.” *Id.* Petitioner points to Figures 1C and 1D of Rubin and the accompanying disclosure describing acceleration patterns consistent with a user riding in a train (Figure 1C) or “in a vehicle in heavy traffic,” which “could include ‘a carpool’” (Figure 1D). *See id.* (citing Ex. 1003 ¶ 203; Ex. 1006, 5:17–19, 5:31–33, Figs. 1C, 1D). Petitioner also provides a number of arguments in support of its combination of Kim and Rubin. *See id.* at 44–47 (citing Ex. 1001, 6:41–44; Ex. 1003 ¶¶ 207–212; Ex. 1005 ¶¶ 11, 75; Ex. 1006, 1:15–19, 1:22–25, 2:40–46, 5:17–54, 17:5–8, Fig. 6; Ex. 1007, Abstract). For example, Petitioner asserts that Kim and Rubin both use accelerometer data to detect the motion of a vehicle, and a POSITA would have been motivated to combine the references because both references seek to tailor the services on a mobile device to the needs of a

IPR2021-01209

Patent 9,152,609 B2

user in a moving vehicle, and Rubin provides an additional helpful “determination of a vehicle’s context—namely, the vehicle type.” *Id.* at 45–46 (citing Ex. 1003 ¶¶ 209–210; Ex. 1005 ¶ 75; Ex. 1006, 1:15–19, 2:40–46, 5:17–54).

Patent Owner argues that Rubin’s “determining that a user is in a vehicle that is in heavy traffic is not the same as determining that the user is in a carpool.” PO Resp. 47–48. Patent Owner also argues that Rubin fails to disclose a device carried by a user riding a train because the “vehicle” in claim 6 refers to the same “vehicle” in claim 1, and Petitioner incorrectly relies on “Rubin’s train” as the vehicle in claim 6, while relying on “Kim’s car” as the vehicle in claim 1. *See id.* at 48–49. According to Patent Owner, Kim’s system relies on sensor inputs from a car that are not present on a train, leaving no basis to compare the vibrations in Kim’s car to those on Rubin’s train. *Id.* at 49 (citing Ex. 1005 ¶ 41).

Petitioner replies that claim 6 requires “determining a type of the vehicle,” both Kim and Rubin use similar sensors, and Rubin “discloses a scheme to determine the type of vehicle a user is in, such as a train.” Pet. Reply 20–21 (citing Pet. 43–44). According to Petitioner, the “vibrations present in a train may be different than those in a vehicle, however such vibrations are still detectable by Kim and when combined with the pattern matching of Rubin could be used to determine that the user is in a train.” *Id.* at 21 (citing Pet. 43–44; Ex. 1003 ¶¶ 204–212).

In its Sur-reply, Patent Owner argues that “Rubin cannot be *combined* with Kim to make claim 6 obvious” because Kim detects context inside a car and “Petitioner has failed to show that Kim’s method would be able to determine the context of a user riding in a train, as opposed to a user in a car.” PO Sur-reply 21 (citing Ex. 1005 ¶ 41). Patent Owner also argues that

IPR2021-01209

Patent 9,152,609 B2

“[t]here is no disclosure that Kim could detect any analogous parameters that would be indicative of a train.” *Id.*

Based on our review of the arguments and evidence, Petitioner establishes that Rubin discloses the additional limitations of claim 6. *See* Pet. 44 (citing Ex. 1003 ¶ 203; Ex. 1006, 5:17–19, 5:31–33, Figs. 1C, 1D). Rubin discloses “a mobile device carried by a user who is riding a train,” and a figure showing the acceleration data pattern associated with the user’s device. *See* Ex. 1006, 5:17–19, Fig. 1C. Rubin’s acceleration data patterns associated with a train allow Rubin’s system to detect when another user is riding a train. *See id.*; *see also id.* at 17:5–8 (describing correlation of real-time acceleration data with acceleration profiles); Ex. 1003 ¶¶ 203–204. Rubin’s disclosures, coupled with the credible declarant testimony interpreting Rubin, adequately support Petitioner’s argument that Rubin discloses “determining a type of the vehicle, wherein the type of the vehicle is . . . a train.” *See* Pet. 44.¹⁴

We also find that Petitioner establishes that a POSITA would have been motivated to combine Kim and Rubin for the reasons provided by Petitioner, which we adopt as our own. *See* Pet. 44–47 (citing Ex. 1001, 6:41–44; Ex. 1003 ¶¶ 207–212; Ex. 1005 ¶¶ 11, 75; Ex. 1006, 1:15–19, 1:22–25, 2:40–46, 5:17–54, 17:5–8, Fig. 6; Ex. 1007, Abstract). For example, Petitioner persuasively argues, with credible declarant support, that a POSITA would have been motivated to combine the references because both references seek to tailor the services on a mobile device to the needs of

¹⁴ Because claim 6 only requires the determination of “one of” the types of vehicles listed in the claim, we need not reach whether Rubin also discloses determining a type of vehicle that is “a carpool.” *See* Pet. 44; PO Resp. 47–48; Ex. 1001, 11:56–60.

IPR2021-01209

Patent 9,152,609 B2

a user in a moving vehicle, and Rubin provides an additional helpful “determination of the vehicle’s context—namely, the vehicle type.” *Id.* at 45–46 (citing Ex. 1003 ¶¶ 209–210; Ex. 1005 ¶ 75; Ex. 1006, 1:15–19, 2:40–46, 5:17–54).

We do not agree with Patent Owner’s arguments. Patent Owner incorrectly faults Petitioner for relying on “Rubin’s train” as the vehicle in claim 6, while relying on “Kim’s car” as the vehicle in claim 1 because the “vehicle” in claim 6 refers to the same “vehicle” in claim 1. *See* PO Resp. 48–49. As part of this argument, Patent Owner suggests that Petitioner must show that Kim’s existing sensors and system would operate as claimed on a train. *See id.*; PO Sur-reply 21 (“Petitioner has failed to show that Kim’s method would be able to determine the context of a user riding in a train, as opposed to a user in a car.”) (citing Ex. 1005 ¶ 41). Although claims 1 and 6 refer to the same vehicle, Petitioner does not, and need not, establish that Rubin or Kim, evaluated in isolation, discloses all of the requirements of the vehicle in both claims, or that Kim’s device already has the capability of detecting vibrations on a train in a manner that would allow one to determine that the vehicle is a train. *See id.* Instead, Petitioner proposes combining Kim with the vehicle type detection functionality taught by Rubin. *See* Pet. 47; Pet. Reply 20–21. The resulting modification of Kim (by adding Rubin’s ability to detect that a vehicle is a train) satisfies all of the limitations of claim 6, without any contradiction between the “vehicle” limitations in either claim, because the proposed combination retains Kim’s functionality that already satisfies the limitations of claim 1 and simply incorporates the functionality taught by Rubin. Patent Owner’s argument appears to assume that Kim may lose functionality by adding Rubin’s functionality, but Patent Owner cites no support for such an assumption.

IPR2021-01209

Patent 9,152,609 B2

Patent Owner also argues that Kim’s system relies on different sensor inputs from a car than a train, and Petitioner fails to bridge the gaps between Kim and Rubin. PO Resp. 49 (citing Ex. 1005 ¶ 41); *see also* PO Sur-reply 21 (arguing that “Rubin cannot be *combined* with Kim to make claim 6 obvious”) (citing Ex. 1005 ¶ 41). Patent Owner fails to address Petitioner’s detailed and thorough basis for the proposed combination, including the common acceleration sensors used in each device and common goals that would encourage a POSITA to make the combination with a reasonable expectation of success. *See* Pet. 44–47 (citing Ex. 1001, 6:41–44; Ex. 1003 ¶¶ 207–212; Ex. 1005 ¶¶ 11, 75; Ex. 1006, 1:15–19, 1:22–25, 2:40–46, 5:17–54, 17:5–8, Fig. 6; Ex. 1007, Abstract). We find Petitioner’s interpretation of Kim and Rubin, and the reasons for the proposed combination, supported by credible testimony from Dr. Michalson, more persuasive than Patent Owner’s unsupported attorney argument on these issues. *See* Ex. 1003 ¶¶ 207–212; PO Resp. 48–49.

“Once all relevant facts are found, the ultimate legal determination [of obviousness] involves the weighing of the fact findings to conclude whether the claimed combination would have been obvious to an ordinary artisan.” *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1361 (Fed. Cir. 2017). Above, based on the full record before us, we provide our factual findings regarding (1) the level of ordinary skill in the art, (2) the scope and content of the prior art, (3) any differences between the claimed

IPR2021-01209

Patent 9,152,609 B2

subject matter and the prior art; and (4) objective indicia of nonobviousness.¹⁵

In particular, we find that (1) Petitioner’s proposed level of ordinary skill in the art is consistent with the art of record; (2) Petitioner establishes that the combination of Kim and Rubin discloses or renders obvious all the limitations of claim 6 and that a POSITA would have found it obvious to combine their teachings; and (3) Patent Owner presents insufficient evidence to establish any objective indicia of nonobviousness. Weighing these underlying factual determinations, Petitioner has shown, by a preponderance of the evidence, that the combination of Kim and Rubin renders claim 6 obvious.

ii. Dependent Claim 7

Claim 7 depends from claim 6 and further recites “the method further comprises: determining that the individual is a driver based at least in part on at least one of the following: a) the type of the vehicle and b) acceleration, forces, velocity, location, and time.” Ex. 1001, 11:61–65. Petitioner refers back to its argument for claim 5, and argues that “Kim itself discloses the additional limitation of claim 7” because “Kim discloses the use of an accelerometer for determining that the user is driving a car.” Pet. 47–48 (citing Ex. 1003 ¶¶ 213–215; Ex. 1005 ¶¶ 73, 75, Fig. 6A).

¹⁵ We apply these same four factors throughout our obviousness analysis. Because our findings that Petitioner’s proposed level of ordinary skill in the art is consistent with the art of record and Patent Owner fails to establish any objective indicia of nonobviousness apply to each obviousness challenge, we do not repeat these findings. Accordingly, our obviousness determinations turn on whether the prior art discloses the limitations of the claims in question and whether Petitioner establishes a sufficient motivation to modify or combine the references, and we focus on those issues in our remaining analysis below.

IPR2021-01209

Patent 9,152,609 B2

Patent Owner argues that Petitioner’s “argument again illustrates Petitioner’s mixing and matching of vehicles.” PO Resp. 50. Patent Owner argues that Petitioner improperly asserts that “the ‘vehicle’ is a car for claim 1’s limitations, a train for claim 6’s limitations, and then a car again for claim 7’s limitations” and “may not rely on this type of mixing and matching to establish obviousness.” *Id.*; *see also* PO Sur-reply 21.

Petitioner argues in Reply that “Patent Owner again attempts to misrepresent Petitioner’s argument by stating that it “mix[es] and match[es]” vehicles.” Pet. Reply 21 (citing PO Resp. 50). According to Petitioner, “claim 7 only requires ‘determining that the individual is a driver’ and does not limit itself to a specific vehicle” and “Kim discloses detecting that the user is driving a ‘car.’” *Id.* (citing Ex. 1001, Claim 7; Ex. 1003 ¶ 215; Ex. 1005 ¶¶ 73, 75, Fig. 6A).

We first address the requirements of claim 7 and Petitioner’s proposed obviousness challenge. Claim 7 requires “determining that the individual is a driver based at least in part on *at least one of the following*: a) the type of the vehicle and b) acceleration, forces, velocity, location, and time,” which means that Petitioner must show that the determination is based on either “the type of the vehicle” *or* “acceleration, forces, velocity, location, and time.” Petitioner relies on and incorporates its arguments as to claim 5, which also requires determining whether the individual is a driver based in part on “acceleration, forces, velocity, location, and time” and argues that Kim’s “use of an accelerometer” determines that the user is a driver. *See* Pet. 47–48 (citing Ex. 1003 ¶¶ 213–215; Ex. 1005 ¶¶ 73, 75, Fig. 6A). Accordingly, Petitioner does not assert that Kim discloses using “the type of the vehicle” to determine whether the user is a driver, and instead relies on

IPR2021-01209

Patent 9,152,609 B2

its argument for claim 5 that Kim discloses using “acceleration, forces, velocity, location, and time” for that purpose. *See id.*

When discussing this same argument above in the context of claim 5, we conclude that Petitioner fails to establish that Kim’s detection of “vibration and noise” discloses the claimed “acceleration, forces, [and] velocity” because Petitioner fails to explain adequately how Kim bases its determination that the individual is a driver on acceleration and velocity readings. *See* Pet. 28; Ex. 1005 ¶ 73. For the same reasons that we provide in our analysis of claim 5, we find that Petitioner fails to establish that Kim discloses the additional limitation in claim 7 requiring “determining that the individual is a driver based at least in part on at least one of the following: a) the type of the vehicle and b) acceleration, forces, velocity, location, and time.”

Based on the foregoing, we find that Petitioner has not established by a preponderance of the evidence that claim 7 would have been obvious over the combination of Kim and Rubin.

iii. Dependent Claim 8

Claim 8 depends from claim 7 and further requires “the at least one sensor is an accelerometer.” Ex. 1001, 11:66–67. Petitioner alleges that claim 8 would have been obvious based on Kim and Rubin, and relies on its analysis of claims 6 and 7 as part of its analysis. Pet. 48 (“As explained above, the limitations of claim 6 would have been obvious in view of Kim and Rubin, and the limitation of claim 7 is also disclosed by Kim.”). Patent Owner relies on its arguments as to the claims from which claim 8 depends for its arguments as to claim 8. PO Resp. 50.

We determine in the preceding section that Petitioner fails to establish that Kim discloses the limitations in claim 7. In its arguments as to claim 8,

IPR2021-01209

Patent 9,152,609 B2

Petitioner does not provide any alternative basis to conclude that the combination of Kim and Rubin discloses limitations of claim 7.

Accordingly, because Petitioner fails to establish that the combination of Kim and Rubin discloses all of the limitations of claim 7, Petitioner also fails to establish that the same combination discloses all of the limitations of claim 8, which depends from claim 7.

Based on the foregoing, we find that Petitioner has not established by a preponderance of the evidence that claim 8 would have been obvious over the combination of Kim and Rubin.

iv. Dependent Claim 15

Claim 15 depends directly from claim 1 and further recites “wherein the determining the one or more operational states of the vehicle further comprises determining a type of the vehicle wherein the type of the vehicle is at least one of the following a train and a bus.” Ex. 1001, 12:22–25. In an argument very similar to that raised with respect to claim 6, Petitioner argues that “Rubin discloses using acceleration data pattern matching to detect when a user is riding in different vehicles.” Pet. 49. Petitioner relies on Rubin’s Figure 1C as disclosing “acceleration patterns for ‘a mobile device carried by a user who is riding a train.’” *Id.* (citing Ex. 1003 ¶ 250; Ex. 1006, 5:17–19, 5:31–33). Petitioner asserts that the “combination of Kim and Rubin therefore satisfies the additional limitation of claim 15” and that it would have been obvious to combine Kim and Rubin for the reasons Petitioner provides in relation to its challenge to claim 6. *Id.* (citing Ex. 1003 ¶¶ 248–252). Patent Owner relies on its arguments as to claim 1 for claim 15, but does not raise any additional arguments specific to claim 15. PO Resp. 50.

IPR2021-01209

Patent 9,152,609 B2

Based on our review of the arguments and evidence, Petitioner establishes that Rubin discloses “determining a type of the vehicle wherein the type of the vehicle is at least one of the following a train and a bus” and that the combination of Kim and Rubin discloses all of the limitations of claim 15. *See* Pet. 49 (citing Ex. 1003 ¶¶ 248–252; Ex. 1006, 5:17–19, 5:31–33). We adopt Petitioner’s arguments and evidence as to claim 15 as our own. *See id.* As noted above in the context of our analysis of claim 6, we also find that Petitioner establishes a sufficient motivation to combine Kim and Rubin for the reasons provided by Petitioner. *See* Pet. 44–47.

Based on the foregoing, we find that Petitioner has shown by a preponderance of the evidence that (1) the combination of Kim and Rubin satisfies all of the limitations of claim 15 and (2) a POSITA would have been motivated to combine the references in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of the evidence that the combination of Kim and Rubin renders claim 15 obvious.

c. Kim and Mitrovic–Dependent Claims 10 and 12

Claim 10 depends from claim 9 and further recites “wherein the at least one predetermined pattern recognition model comprises: at least one markov model generated for an average driver.” Ex. 1001, 12:4–6.

Claim 12 depends from claim 3 and contains limitations very similar to those in claim 10: “wherein the at least one pattern recognition model comprises: at least one markov model.” *Id.* at 12:10–12. We determine above that Petitioner establishes that Kim anticipates claims 3 and 9.

Petitioner asserts that Kim in combination with Mitrovic discloses all of the additional limitations of claims 10 and 12. Pet. 49–55. Petitioner sets forth an analysis of claim 10 that addresses all of the limitations in claim 10 as

IPR2021-01209

Patent 9,152,609 B2

well as the basis for the combination, and then incorporates that analysis by reference in its arguments as to claim 12. *See id.* Patent Owner takes the same approach by setting forth its arguments with respect to claim 10 and then incorporating those arguments by reference in its analysis of claim 12. *See* PO Resp. 50–55. We will follow the same approach here, and focus on claim 10, with our analysis of claim 10 applying to claim 12.

Petitioner provides analysis of each limitation in claim 10, with citations to the references that correspond to each of the claim limitations. Pet. 49–52. Petitioner also cites to the relevant declarant testimony as support for its arguments. *Id.* (citing various portions of Ex. 1003). Petitioner asserts that Mitrovic discloses a “simple and reliable method for the recognition of driving events using hidden Markov models,” satisfying the claim limitation requiring “at least one markov model generated for an average driver.” *Id.* at 52 (quoting Ex. 1008, 198). Petitioner also asserts that “Mitrovic explains that the Markov models may be generated for several types of ‘driving events’ such as ‘driving a vehicle along left and right curves’ and ‘turning a vehicle left and right on intersections.’” *Id.* (citing Ex. 1003 ¶ 226; Ex. 1008, 203).

As to the combination, Petitioner argues that it “would have been obvious to combine the capability of Kim’s portable terminal device with the pattern matching Markov models of Mitrovic” and provides a number of reasons in support of the combination. Pet. 52–54 (citing Ex. 1003 ¶¶ 228–232). For example, Petitioner argues that Kim, like Mitrovic, uses acceleration sensors to determine the motion of a vehicle and compares sensor output to stored patterns, and Mitrovic uses sensor input for its markov models to determine driving events. *Id.* at 52–53 (citing Ex. 1001, 5:37–40; Ex. 1003 ¶ 229–230; Ex. 1005 ¶¶ 73–74, 85; Ex. 1008, 201, 204).

IPR2021-01209

Patent 9,152,609 B2

Petitioner also argues that “the use of the vehicle movement based Markov models disclosed in Mitrovic to inform the pattern recognition of vehicle movement in Kim would have been obvious to one of skill in the art.” *Id.* at 53 (citing Ex. 1003 ¶ 230). Petitioner further contends that a POSITA would have had a reason to make the combination because “Kim discloses the need for specific tailoring of services on a portable device based on the state of the vehicle and a method of meeting that need by comparing measured signals with reference signals” and “Mitrovic discloses that Markov models may be used as pattern recognition tools in determining driving events, such as turning a car.” *Id.* at 54 (citing Ex. 1003 ¶ 231; Ex. 1005 ¶¶ 73–74, 82; Ex. 1010, 201, 204). Finally, Petitioner argues that the combination involves “the arrangement of old elements (portable device, a portable device’s accelerometer, markov models) with each performing the same function it had been known to perform (portability, detecting movement, pattern matching) and yielding no more than what one would expect from such an arrangement (determination that the vehicle is moving in a certain manner), as Mitrovic demonstrates.” *Id.* (citing Ex. 1003 ¶ 232).

Patent Owner first argues that “Mitrovic does not disclose the use of a ‘[M]arkov model generated for an average driver’” because Mitrovic uses data from 22 test drives undertaken in 1999. PO Resp. 51 (citing Ex. 1008, 198, 203). According to Patent Owner, “Mitrovic does not claim that the test drives chosen are in any way representative of an ‘average driver’” and “the paper explains that although using larger data sets to train Markov models ‘reduced quantization error . . . HMM’s trained with larger sets of observations had a worse recognition rate than HMMs trained with smaller sets.’” *Id.* (citing Ex. 1008, 202). Patent Owner asserts that “[r]ather than attempting to model an average driver, the samples chosen were ‘selected as

IPR2021-01209

Patent 9,152,609 B2

a convenient compromise’ between reducing quantization error and increasing recognition rate.” *Id.*

Patent Owner also argues that a POSITA “would not be motivated to combine Kim with Mitrovic and would lack a reasonable expectation of success.” PO Resp. 51. According to Patent Owner, “Mitrovic does not involve ‘a portable device carried by an individual’” and “[i]nstead, Mitrovic requires an elaborate system of fixed sensors and computers” that “are not on a portable device.” *Id.* at 51–52 (citing Ex. 1008, 201). Patent Owner also argues that “[n]either reference gives any reason to believe that Mitrovic’s Markov models would work on Kim’s mobile device.” *Id.* at 52. Patent Owner also contends that “Mitrovic makes clear that the configuration of the sensors may affect the system’s success rate” and “the configuration of the sensors in Kim is completely different from Mitrovic.” *Id.* at 53 (citing Ex. 1005 ¶ 79; Ex. 1008, 204). Patent Owner also alleges that the use of accelerometers in Kim and Mitrovic to detect a vehicle’s motion “is a far cry from establishing that analysis of acceleration sequences via Markov models would work on a mobile device.” *Id.* (citing Ex. 1003 ¶¶ 229–232). Finally, Patent Owner argues that “Mitrovic requires the ‘tight coupling with the car’ that the ’609 patent disclaims.” *Id.* at 54 (citing Ex. 1001, 1:37–38).

In its Reply, as to whether Mitrovic discloses generating a markov model “for an average driver,” Petitioner argues that “Mitrovic teaches the generation of markov models for a set of drivers” and “discloses generating a markov model for a set population.” Pet. Reply 21–22 (citing PO Resp. 51). Petitioner also contends that Mitrovic discloses more than the ’609 patent in this regard, and that “Patent Owner cannot demand more of the prior art than the patent itself.” *Id.* at 22 (citing Ex. 1001, 5:6–26). As to the

IPR2021-01209

Patent 9,152,609 B2

motivation to combine, Petitioner argues that Patent Owner “misrepresents the combination” of Kim’s terminal with Mitrovic’s markov models by arguing that “the physical aspects of the system of Mitrovic are too difficult to combine with Kim’s device.” *Id.* (citing PO Resp. 51–52). Petitioner states that “the Petition did not argue combining the hardware of Mitrovic with Kim—Kim already provides the hardware, and Mitrovic is needed only to provide an additional gloss on the pattern-matching approach.” *Id.* (citing Pet. 49–54). Petitioner also argues that even if Mitrovic’s markov model “may be imperfect when implemented on Kim” that does not mean that “[s]imply utilizing a markov model on the device in Kim” would not work as claim 10 requires. *Id.* at 22–23 (citing PO Resp. 53; Ex. 1001, claim 1; Ex. 1003 ¶¶ 228–232).

In its Sur-reply, Patent Owner argues that “Petitioner does not explain why the analytic approach used on the type of data collected by Mitrovic’s elaborate series of fixed sensors could be incorporated to the pattern matching techniques that are used on the indirect vibration data collected by Kim’s single accelerometer in a portable device.” PO Sur-reply 22 (citing Pet. Reply 22).

Based on our review of the arguments and evidence, we find that Petitioner establishes that the combination of Kim and Mitrovic discloses all of the limitations of claim 10. *See* Pet. 63–66. As to the dispute over whether Mitrovic discloses a “markov model generated for an average driver,” we find Petitioner’s argument and evidence sufficient to show that Mitrovic’s models were generated for average drivers even though Mitrovic does not use the term “average driver.” *See* Pet. 52; Ex. 1003 ¶¶ 226–227; Ex. 1008, 198, 203. Mitrovic states that its models provide a “simple and reliable method for the recognition of driving events” and “may be generated

IPR2021-01209

Patent 9,152,609 B2

for several types of ‘driving events’ such as” driving along right and left curves and turning vehicles left and right at an intersection. Ex. 1008, 198, 203. Mitrovic states that it seeks to identify and learn driving patterns in order to “provide useful information which can help the driver to fulfill a range of different driving navigational tasks” and in turn reduce the likelihood of accidents. *Id.* at 198. We agree with Petitioner and its declarant that Mitrovic’s teachings, when read in context, are meant for a general population that would include the average driver. *See* Pet. 52; Pet. Reply 21–22; Ex. 1003 ¶¶ 226–227. Patent Owner faults Mitrovic’s use of just 22 drivers to generate its test data, but the claim does not place any precise limits on the scope of “average driver,” Patent Owner does not offer any formal construction for the term, and Petitioner points out that the Specification fails to provide any guidance on the scope of the term. *See* PO Resp. 51–52; Pet. Reply 21–22. Moreover, Patent Owner does not respond to Petitioner’s argument that Mitrovic provides more guidance than the ’609 patent provides on the “average driver” issue. *See* Pet. Reply 21–22 (citing Ex. 1001, 5:6–26); PO Sur-reply 22. Further, Petitioner supports its position with credible declarant testimony interpreting Mitrovic, while Patent Owner’s interpretation of Mitrovic relies on insufficiently supported attorney argument. *See* Ex. 1003 ¶¶ 226–227; PO Resp. 51–52. On the whole, we find that Petitioner establishes that Mitrovic discloses a “markov model generated for an average driver.”

We also find that Petitioner establishes that a POSITA would have been motivated to combine Kim and Mitrovic with a reasonable expectation of success for the reasons stated by Petitioner. Pet. 52–54 (citing Ex. 1003 ¶¶ 228–232). Petitioner provides detailed reasoning based on the similarities between Kim and Mitrovic, including the use of acceleration sensors to

IPR2021-01209

Patent 9,152,609 B2

determine the motion of a vehicle and comparison between sensor outputs to stored patterns to interpret driving events. *Id.* at 52–53 (citing Ex. 1001, 5:37-40; Ex. 1003 ¶¶ 229–230; Ex. 1005 ¶¶ 73–74, 85; Ex. 1008, 201, 204). Petitioner also persuasively argues that “Kim discloses the need for specific tailoring of services on a portable device based on the state of the vehicle and a method of meeting that need by comparing measured signals with reference signals” and “Mitrovic discloses that Markov models may be used as pattern recognition tools in determining driving events, such as turning a car.” *Id.* at 54 (citing Ex. 1003 ¶ 231; Ex. 1005 ¶¶ 73–74, 82; Ex. 1010, 201, 204). We also agree with Petitioner that many of Patent Owner’s arguments improperly interpret Petitioner’s proposed combination, which does not involve adding Mitrovic’s hardware to Kim’s system. *See id.* at 53–54; Pet. Reply 22. Patent Owner also argues that Mitrovic’s markov models may not work on Kim’s system, or not work as well, but Petitioner correctly points out that claim 10 merely requires the utilization of the models without reciting any specific performance metrics; the fact that the models may work better using Mitrovic’s hardware does not fatally undermine Petitioner’s showing as to a motivation to combine. *See* Pet. Reply 22–23. We find Petitioner’s interpretation of the references and motivation to combine issue, supported by credible testimony from Dr. Michalson, more persuasive than Patent Owner’s attorney argument on these issues. *See* Ex. 1003 ¶¶ 228–232.

Our analysis of the issues in claim 10 applies to the same limitations in claim 12. Claim 12 does not include the “generated for an average driver” limitation from claim 10, and the only issue Patent Owner raises that applies to claim 12 relates to the motivation to combine, which arguments we found lacking. *See* Ex. 1001, 12:10–13.

IPR2021-01209

Patent 9,152,609 B2

Based on our review of Petitioner’s argument and evidence, we find that Petitioner establishes by a preponderance of the evidence that (1) the combination of Kim and Mitrovic satisfies all of the limitations of claims 10 and 12; and (2) a POSITA would have been motivated to combine Kim and Mitrovic in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of the evidence that the combination of Kim and Mitrovic renders claims 10 and 12 obvious.

d. Kim and Barbera – Dependent Claims 16, 18, and 19

Petitioner asserts that Kim in combination with Barbera discloses all of the limitations of claims 16, 18, and 19. Pet. 55–64. Petitioner provides analysis of each limitation in claims 16, 18, and 19, with citations to the references that correspond to each of the claim limitations. *Id.* Petitioner also cites to the relevant declarant testimony. *Id.* (citing various portions of Ex. 1003). We address each claim in turn, with an emphasis on the arguments raised by Patent Owner.

i. Dependent Claim 16

Claim 16 depends from claim 1, and further recites “wherein the performing the at least one action when the at least one operational state indicates that the vehicle is in the moving state further comprises one of the following” and goes on to list a number of actions including “disabling usage of the portable device when the at least the one operational state indicates the vehicle is in the moving state and the individual operates the portable device” and “making a connection with another phone when the at least the one operational state indicates the vehicle is in the moving state and the individual operates the portable device.” Ex. 1001, 12:26–47.

IPR2021-01209

Patent 9,152,609 B2

Petitioner argues that Barbera discloses a device that “includes a safety feature configured to prevent at least some forms of use of the device when the user is traveling beyond a speed threshold.” Pet. 56–57 (quoting Ex. 1007, Abstract). Petitioner asserts that Barbera also discloses comparing “the speed indicated by the signal communicated by the speed detection logic (50) to a threshold value” and if “the speed threshold has been exceeded,” a signal “is configured to disable one or more functions of the portable electronic device.” *Id.* at 57 (citing Ex. 1003 ¶ 260; Ex. 1007, 4:10–16). Petitioner further argues that Barbera teaches disabling an entire device if the speed exceeds a threshold or select applications, such as voice and text applications. *Id.* at 57–58 (citing Ex. 1003 ¶¶ 261–262; Ex. 1007, 5:63–67, 6:7–10). Petitioner also contends that Barbera teaches sending an alert to another cell phone when a user uses a cell phone while travelling. *Id.* at 58 (citing Ex. 1003 ¶ 263; Ex. 1007, 12:24–29). According to Petitioner, these disclosures satisfy two distinct actions listed in claim 16, even though Petitioner need only show that one of these limitations is satisfied: (1) “disabling usage of the portable device when the at least the one operational state indicates the vehicle is in the moving state and the individual operates the portable device” and (2) “making a connection with another phone when the at least the one operational state indicates the vehicle is in the moving state and the individual operates the portable device.” *Id.* at 57–58.

Petitioner also argues that it would have been obvious to combine Kim and Barbera for a number of reasons. *Id.* at 59–62 (citing Ex. 1003 ¶¶ 265–270). For example, Petitioner argues that: (1) Kim and Barbera are analogous art because each discloses portable electronic devices that detect motion of a vehicle and take actions based on that information; (2) applying

IPR2021-01209

Patent 9,152,609 B2

the speed detection and device location methods of Barbera “would have been well within the level of ordinary skill in the art” and “would not have resulted in any unpredictable results”; (3) a POSITA would have had a reason to combine the references given Kim’s disclosed need for context-aware services that automatically select services “based on whether the user is driving a vehicle” and Barbera’s ability to address safety concerns when using a mobile device while driving a vehicle; (4) other inventors patented similar safety devices before the ’609 patent was filed, which provides additional motivation to add Barbera’s safety feature to Kim; and (5) before the ’609 patent, “providing a wide variety of location and context-aware services on portable electronic devices had become increasingly popular,” such that adding features similar to Barbera’s using software and existing hardware on portable devices like Kim’s terminal would have been possible and further motivated the proposed combination. *Id.* (citing Ex. 1001, 1:48–51; Ex. 1003 ¶¶ 265–270; Ex. 1005 ¶¶ 11, 75–76; Ex. 1006, 1:15–19; Ex. 1007, Abstract, 1:14–16; Ex. 1009 ¶ 3; Ex. 1010 ¶¶ 6–7, 13).

Patent Owner argues that “Barbera does not disclose performing any actions based upon a determination that “the vehicle is in the moving state” because disabling functionality beyond a speed threshold in Barbera does not disable actions “simply because the vehicle is moving.” PO Resp. 55–56. According to Patent Owner, “Barbera discloses that a specific speed threshold must first be crossed,” which “does not distinguish between stopped cars and moving cars; rather, it distinguishes between cars moving below a particular speed and cars moving above a particular speed.” *Id.* at 56; *see also* PO Sur-reply 23 (“Petitioner fails to show that measuring a speed *threshold* anticipates determining whether a car is *moving*.”). As to the motivation to combine, Patent Owner first argues that Petitioner fails to

IPR2021-01209

Patent 9,152,609 B2

establish why a POSITA would combine Kim with Barbera when Kim focuses on using sensor measurements and Barbera uses GPS and land-based signals to determine speed and position. PO Resp. 58–59. Patent Owner further contends that a POSITA would not have been motivated to combine Kim and Barbera because they “are directed to different ideas.” *Id.* at 59. Patent Owner argues that “Kim is directed towards providing enhanced functionality to the user of a terminal based on the user’s intent, inferred from context,” while “Barbera is directed towards preventing a user of a device from using voice or text services while driving—in other words, limiting the functionality of a device contrary to the intent of the user.” *Id.* at 59–60; *see also* PO Sur-reply 24 (arguing a failure to show motivation where Kim enhances functionality while Barbera limits the functionality of a portable device).¹⁶

Petitioner replies that if “a vehicle is traveling ‘beyond [a] speed threshold’” as in Barbera, “then it is ‘in the moving state’” as claim 16 requires. Pet. Reply 23 (citing Ex. 1007, Abstract). Petitioner also argues that we should disregard “Patent Owner’s attempts to conflate the broadly claimed element of ‘in the moving state’ with ‘distinguish[ing] between stopped cars and moving cars.’” *Id.* (citing PO Resp. 56). As to motivation to combine, Petitioner argues that Patent Owner ignores that both Kim and Barbera disclose mobile devices used in vehicles and vehicle-specific applications. *Id.* at 25 (citing Ex. 1003 ¶¶ 202–207; Ex. 1005 ¶ 76; Ex. 1007, Abstract).

¹⁶ Patent Owner’s arguments as to motivation combine go to the combination of Kim and Barbera generally, and our resolution of this dispute here applies to the analysis of claims 16, 18, and 19. *See* PO Resp. 58–60.

IPR2021-01209

Patent 9,152,609 B2

The parties' dispute focuses on whether "*when* the at least one operational state indicates that *the vehicle is in the moving state*" in claim 16 encompasses taking action when a speed exceeds a threshold, as in Barbera. *See* PO Resp. 55–56. Petitioner takes the position that "moving state" covers any state where the vehicle moves, including when a driver exceeds a speed threshold, and we agree. Nothing in the claim language modifies "moving state" to suggest a narrower scope. Patent Owner argues that the claim requires distinguishing "between stopped cars and moving cars" or "determining whether a car is moving," but the claim language does not require either of these steps when it simply requires making a determination "when . . . the vehicle is in the moving state." PO Resp. 56; *see also* PO Sur-reply 23. Performing an action when a vehicle is moving, i.e., *during* movement, does not require determining when the vehicle first begins to move. Patent Owner provides no support in the claim language or the Specification for its proposed reading of the claim, and we decline to adopt its approach. *See id.* Because "when the at least one operational state indicates that the vehicle is in the moving state" in claim 16 encompasses vehicles that are already moving and exceed a speed threshold, as in Barbera, we find that Petitioner establishes that Barbera discloses this limitation. *See* Pet. 56–58; Ex. 1003 ¶¶ 256–263.

We have also reviewed Petitioner's argument and evidence as to the remaining limitations of claim 16. *See* Pet. 56–59. With the exception of the argument as to the "vehicle is in the moving state" limitation discussed immediately above, Patent Owner does not dispute Petitioner's showing as to claim 16. *See* PO Resp. 55–56. We find Petitioner's argument and evidence as to these undisputed issues persuasive and adopt it as our own. *See* Pet. 56–62.

IPR2021-01209

Patent 9,152,609 B2

We also find that Petitioner establishes adequately that a POSITA would have been motivated to combine Kim and Barbera for the reasons provided by Petitioner, which rationale which we adopt as our own. *See* Pet. 59–62 (citing Ex. 1001, 1:48–51; Ex. 1003 ¶¶ 265–270; Ex. 1005 ¶¶ 11, 75–76; Ex. 1006, 1:15–19; Ex. 1007, Abstract, 1:14–16; Ex. 1009 ¶ 3; Ex. 1010 ¶¶ 6–7, 13); Pet. Reply 25. Patent Owner does not directly attack these many stated reasons in support of the prior art combination, and points to Barbera’s non-exclusive use of GPS in some instances and asserts that “Kim is directed towards providing enhanced functionality to the user of a terminal based on the user’s intent, inferred from context,” while “Barbera is directed towards preventing a user of a device from using voice or text services while driving—in other words, limiting the functionality of a device contrary to the intent of the user.” PO Resp. 59–60; PO Sur-reply 24. Patent Owner’s arguments as to motivation to combine, not supported by any testimony from the perspective of a POSITA, do not undermine Petitioner’s extensive rationale for the proposed motivation to combine. PO Resp. 59–60. In addition, Patent Owner’s arguments narrowly characterize both references in a manner that overlooks their similarities—indeed, both references disclose mobile devices that selectively enable or disable applications while operating a vehicle.

Based on our review of Petitioner’s argument and evidence, we find that Petitioner establishes by a preponderance of the evidence that (1) the combination of Kim and Barbera satisfies all of the limitations of claim 16; and (2) a POSITA would have been motivated to combine Kim and Barbera in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of

IPR2021-01209

Patent 9,152,609 B2

the evidence that the combination of Kim and Barbera renders claim 16 obvious.

ii. Dependent Claim 18

We found Petitioner’s argument and evidence that Kim anticipates claim 18 persuasive for the reasons provided above. We address whether the combination of Kim and Barbera renders claim 18 obvious for completeness and to provide context for our discussion of Petitioner’s obviousness challenge to claim 19, which depends from claim 18.

As noted above, claim 18 depends from claim 17 and further recites “wherein the determining of the position of the portable device comprises: determining the position of the portable device in relation to a driver’s seat of the vehicle.” Ex. 1001, 12:55–58. Petitioner argues that “Barbera discloses the use of GPS data to determine the position of the portable device within the vehicle, including in relation to the position of the driver’s side of the vehicle.” Pet. 62. Petitioner relies on Barbera’s statement that “GPS technology permits the determination of whether a user is closer to the middle of the street or the edge of the street, the position of the user in a car (e.g., driver side or passenger side) may be inferred.” *Id.* at 62–63 (quoting Ex. 1007, 9:22–29; citing Ex. 1003 ¶ 281).

Patent Owner argues that “Barbera does not disclose the limitation of ‘determining the position of the portable device in relation to a driver’s seat of the vehicle’ because “Barbera discloses that a portable device can use GPS signals to determine the position of the device *in relation to the road*.” PO Resp. 57 (citing Ex. 1007, 9:21–29). According to Patent Owner, determining a device position in relation to the road “is not the same as determining the position of a portable device in relation to a driver’s seat of the vehicle.” *Id.* Patent Owner also argues that Barbera uses GPS to

IPR2021-01209

Patent 9,152,609 B2

determine the position of the device, and claim 18 precludes the use of GPS because claim 18's "determining" step "must be accomplished via claim 1's 'operation indicators' and both parties agree that operation indicators exclude information received from a centralized source, such as GPS." *Id.* (citing Pet. 9).

Petitioner replies that Patent Owner fails to acknowledge that Barbera expressly discloses using the device position to infer "the position of the user in a car (e.g., driver side or passenger side)," and accordingly satisfies the limitation requiring determining the position of the device "in relation to a driver's seat of the vehicle." Pet. Reply 24 (citing Ex. 1007, 9:22–29). As to whether claim 18 precludes the use of GPS, Petitioner argues that claim 17, from which claim 18 depends, recites "wherein the determining the one or more operational states of the vehicle further comprises: determining a position" and claim 1, from which claim 17 depends, recites: "determining one or more operational states . . . based on the one or more predetermined criteria." *Id.* (quoting Ex. 1001, claims 1 and 17). According to Petitioner, the "based on" language "does not exclude the use of other factors outside the 'predetermined criteria' such as GPS to determine a position of a portable device." *Id.*

In its Sur-reply, Patent Owner argues that Petitioner improperly reads "based on" in the claims as "based at least in part on," and argues that "'based on' should be understood to mean 'based entirely on.'" PO Sur-reply 23–24 (citing Ex. 1001, 11:12, 11:1–15, 11:54, 11:62–63). Patent Owner also argues that "Petitioner has not shown that Barbera uses any information in combination with GPS data to determine the position of the device." *Id.*

IPR2021-01209

Patent 9,152,609 B2

We first address whether claim 18 precludes the use of GPS to determine the position of the device. The parties appear to agree that the Specification of the '609 patent disclaims the use of GPS to generate operation indicators and predetermined criteria. *See* Pet. 9; Pet. Reply 24; PO Resp. 57; PO Sur-reply 23–24. On the other hand, the Specification uses GPS positional information in other contexts to determine the position of the device. *See* Ex. 1001, 8:21–43 (describing use of a device's GPS system to note a location of the device), 10:7–14 (same). Claim 18 does not refer to “operational indicators,” “predetermined criteria,” or “operational states,” but Patent Owner argues that due to its dependence from claim 1, claim 18's “determining” step must use claim 1's operation indicators. PO Resp. 57. We decline to construe claim 18 so narrowly based on this limited argument from Patent Owner. *See id.* First, claim 18 standing alone does not suggest that it must use claim 1's operation indicators to determine the position of the device. Second, claim 17 adds to claim 1's determination of “operational states” limitation by stating that it “further comprises” an additional step of “determining a position,” and the determination of the operational states must be “based on the one or more predetermined criteria *and* the position of the portable device.” Ex. 1001, 12:55–58 (emphasis added). This language expressly requires basing the operational indicators on something more than predetermined criteria or non-GPS operation indicators—it requires determination of a position. This language in claim 17 also refutes any notion that operational states must be “based entirely on” “predetermined criteria”—the claim requires the operational state to be based on position as well. *See* PO Sur-reply 23–24. Third, the Specification suggests that using GPS to provide positional data in some contexts does not run afoul of its statement that operation indicators are not

IPR2021-01209

Patent 9,152,609 B2

generated by GPS sensors. *See* Ex. 1001, 8:21–43, 10:7–14. Based on the foregoing, we decline to read claim 18 as forbidding the use of GPS to determine a position of the device.

We next address whether Petitioner establishes that Barbera discloses “determining the position of the portable device in relation to a driver’s seat of the vehicle.” Barbera states that it uses GPS to determine “whether a user is closer to the middle of the street or the edge of the street,” from which “the position of the user in a car (e.g., driver side or passenger side) may be inferred.” Ex. 1007, 9:22–29. This portion of Barbera adequately supports Petitioner’s argument that Barbera discloses “determining the position of the portable device in relation to a driver’s seat of the vehicle” because inferring the position of the user in a specific position within the car identifies a position that has a known relationship to the driver’s seat of the vehicle. *See* Pet. 62–63; Ex. 1003 ¶ 281. Patent Owner argues that Barbera merely discloses that a portable device can use GPS signals to determine “the position of the portable device *in relation to the road*,” but Patent Owner uses ellipses to omit the key phrase from Barbera as to inferring the location of the user within the vehicle. *See* PO Resp. 57–58 (citing Ex. 1007, 9:21–29 but quoting only 9:24–28 and omitting “the position of the user in a car (e.g., driver side or passenger side) may be inferred”). Further, Petitioner supports its position with credible declarant testimony interpreting Barbera from the perspective of a POSITA, while Patent Owner relies on insufficiently supported attorney argument for its interpretation. *See* Pet. 62–63 (citing Ex. 1003 ¶ 281); PO Resp. 57.

Based on our review of Petitioner’s argument and evidence, we find that Petitioner establishes by a preponderance of the evidence that (1) the combination of Kim and Barbera satisfies all of the limitations of claim 18;

IPR2021-01209

Patent 9,152,609 B2

and (2) a POSITA would have been motivated to combine Kim and Barbera in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of the evidence that the combination of Kim and Barbera renders claim 18 obvious.

iii. Dependent Claim 19

As noted above in the context of our analysis of Petitioner's anticipation challenge to claim 19, the claim depends from claim 18 and further recites "wherein the determining the position of the portable device in relation to a driver's seat of the vehicle comprises: determining that the vehicle is in a moving state and the individual is a driver of the vehicle." Ex. 1001, 12:55–58. Petitioner's argument as to claim 19 relies on some of the same aspects of Barbera as its argument for claim 18. *See* Pet. 63. For example, Petitioner argues that "Barbera discloses the use of GPS data to determine the position of the portable device within a moving vehicle, including in relation to the position of the driver's side of the vehicle," and relies on the same portion of Barbera stating that the position of the device "may be inferred." *Id.* at 63–64 (citing Ex. 1003 ¶ 286; Ex. 1007, 9:22–29). Petitioner also argues that the vehicle in Barbera "is moving during this determination" because Barbera discusses detecting whether a speed exceeds a certain threshold immediately after discussing the position of the device within the vehicle. *See id.* at 64 (citing Ex. 1003 ¶ 287; Ex. 1007, 9:29–32). Based on these disclosures, Petitioner asserts that the combination of Kim and Barbera discloses "determining that the vehicle is in a moving state and the individual is a driver of the vehicle." *Id.* (citing Ex. 1003 ¶¶ 285–288).

Patent Owner raises the same arguments against Petitioner's challenge to claim 19 as it does with respect to claim 18. *See* PO Resp. 58. Patent

IPR2021-01209

Patent 9,152,609 B2

Owner asserts that “[a]s explained regarding claim 18 above, neither Kim nor Barbera teach the ability to determine the position of a portable device in relation to the driver’s seat of a vehicle” and “[a]t most, Barbera teaches the ability to detect the position of the portable device in relation to the road, which can¹⁷ be used to infer whether the user is a driver of the vehicle.” *Id.* (citing Ex. 1007, 9:21–29).

We address Patent Owner’s arguments above in the context of claim 18, and find the arguments equally unpersuasive in the context of claim 19. Petitioner persuasively argues that Barbera discloses determining that the user is the driver of the vehicle while the vehicle is moving to help determine the position of the device in relation to the driver’s seat because Barbera expressly discloses inferring the position of the device within the vehicle. *See* Pet. 63–64; Ex. 1003 ¶¶ 285–288; Ex. 1007, 9:22–32.

Based on our review of Petitioner’s argument and evidence, we find that Petitioner establishes by a preponderance of the evidence that (1) the combination of Kim and Barbera satisfies all of the limitations of claim 19; and (2) a POSITA would have been motivated to combine Kim and Barbera in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of the evidence that the combination of Kim and Barbera renders claim 19 obvious.

¹⁷ Patent Owner may have intended to say “cannot” here, as this statement (Barbera’s system “can be used to infer whether the user is a driver of the vehicle”) undermines Patent Owner’s argument with respect to claim 18. *See* PO Resp. 57 (“Determining the position of a portable device in relation to the road is not the same as determining the position of a portable device in relation to a driver’s seat of the vehicle.”). We do not rely on this statement as an admission by Patent Owner that Barbera teaches the limitation.

e. Kim, Barbera, and Kohli – Dependent Claim 20

Claim 20 depends from claim 1, and further recites “wherein the method further comprises: determining that the vehicle is in the moving state and the individual is a driver of the vehicle, wherein the determining is based at least in part on: 1) the one or more operational states of the vehicle, identifying that the vehicle turns a corner, and 2) the one or more predetermined criteria.” Ex. 1001, 12:63–13:3.

Petitioner asserts that Kim in combination with Barbera and Kohli discloses all of the limitations of claim 20. Pet. 64–66. Petitioner provides analysis of each limitation in claim 20, with citations to the references that correspond to each of the claim limitations. *Id.* Petitioner argues that Kim discloses “determining that the vehicle is in a moving state” based on one or more predetermined criteria because Kim teaches detecting when its terminal “is traveling” based on use of unique vibration patterns and noise. *Id.* at 65 (citing Ex. 1003 ¶ 292; Ex. 1005 ¶¶ 33, 74). Petitioner argues that Barbera discloses using GPS technology to permit ‘the determination of whether a user is closer to the middle of the street or the edge of the street’ and from this information ‘the position of the user in a car (e.g., driver side or passenger side) may be inferred,’” such that Barbera discloses “the individual is a driver of the vehicle.” *Id.* (citing Ex. 1003 ¶ 293; Ex. 1007, 9:25–30). Petitioner also asserts that Kohli discloses a “GPS receiver” that tracks “position information” of a vehicle including “[t]urn detection” that “may be accomplished by monitoring changes in the vehicle vector velocity derived from changes in the GPS derived position information.” *Id.* at 66 (citing Ex. 1003 ¶ 294; Ex. 1013, 3:5–9, 9:45–52, 10:9). Petitioner contends that this aspect of Kohli “discloses using positional information to determine when a vehicle is turning.” *Id.* (citing Ex. 1003 ¶ 294; Ex. 1013, 10:9).

Based on these teachings, Petitioner asserts that the “combination of the terminal of Kim, the driver detecting functionality of Barbera, and the turning identification functions of Kohli therefore discloses” all of the limitations of the claim. *Id.* (citing Ex. 1003 ¶¶ 290–295).

Petitioner also asserts that a POSITA would have been motivated to combine the three references for a number of reasons. Pet. 66–67 (citing Ex. 1001, 2:37–40; Ex. 1003 ¶¶ 229, 266, 296–297; Ex. 1005 ¶ 12; Ex. 1007, 2:37–38; Ex. 1013, 5:7–10). With respect to the addition of Kohli to the Kim/Barbera combination, Petitioner argues that Kohli also relates to detecting motion in vehicles using sensors on devices, and both Kim and Barbera use GPS technology to determine the vehicle’s position, supporting the use of Kohli’s “turn detection functionality” in combination with Kim and Barbera. *Id.* (citing Ex. 1003 ¶ 297).

Patent Owner argues that Kohli merely discloses GPS-based turn detection and does not “detect whether a user is a driver of the vehicle.” PO Resp. 60; *see also* PO Sur-reply 24–25 (“the method must *determine* that ‘the individual is a driver of the vehicle’”). Patent Owner also argues that “claim 20’s ‘determining’ step must be accomplished via claim 1’s ‘operation indicators,’ which exclude information obtained through GPS.” PO Resp. 60. Patent Owner next asserts that Petitioner fails to show an adequate reason to combine the references with a reasonable expectation of success. *Id.* According to Patent Owner, “[n]either Kim nor Barbera contain any disclosures regarding turning, and Kohli gives no information about how its GPS analysis of a car’s movements could be combined with ‘one or more predetermined criteria’ to derive any information about a vehicle’s operational state.” *Id.*; *see also* PO Sur-reply 25 (arguing insufficient evidence of motivation to combine).

Petitioner replies that “the claim does not require detecting that the user is a driver” and “only requires determining the state of the vehicle when ‘the individual is a driver.’” Pet. Reply 25 (citing Ex. 1001, claim 20; Pet. 64). Petitioner also states that Kohli’s use of GPS does not create any issues because the positional information is not an “operation indicator” and GPS may be used to disclose this information. *See id.* at 25–26 (citing Ex. 1001, claim 16). Finally, Petitioner argues that a “POSITA would have been motivated to combine the references with an expectation of success” because “all utilize the ordinary sensors on a mobile device . . . and all three utilize GPS in some form.” *Id.* (citing Pet. 66–67).

Based on our review of the arguments and evidence, we find that Petitioner establishes that the combination of Kim, Barbera, and Kohli discloses all of the limitations of claim 20. First, Kim discloses “determining that the vehicle is in a moving state” based on “one or more predetermined criteria” because Kim teaches detecting when its terminal “is traveling” based on use of unique vibration patterns and noise. Ex. 1005 ¶¶ 33, 74; Ex. 1003 ¶ 292. Second, Barbera discloses that “the individual is a driver of the vehicle” because Barbera’s system determines “whether a user is closer to the middle of the street or the edge of the street,” which allows the system to infer “the position of the user in a car (e.g., driver side or passenger side).” Ex. 1007, 9:25–30; Ex. 1003 ¶ 293. Third, Kohli discloses using positional information to determine when a vehicle is turning a corner by employing its GPS-based turn detection technique. Ex. 1013, 3:5–9, 9:45–52, 10:9; Ex. 1003 ¶ 294. We also agree with Petitioner that “[i]t would have been obvious to combine the capability of Barbera’s portable electronic device with the terminal device of Kim and with the turn detection system of Kohli.” Pet. 66; Ex. 1003 ¶ 296.

IPR2021-01209

Patent 9,152,609 B2

Patent Owner makes several arguments that the combination does not teach all of the limitations of the claim, which we find unpersuasive. *See* PO Resp. 60. Patent Owner argues that “Kohli does not disclose the ability to detect whether a user is a driver of a vehicle” and takes the position that the claim requires a determination that the user is a driver. *See id.*; PO Sur-reply 24–25. Petitioner asserts that the phrase “and the individual is a driver of the vehicle” merely indicates that the determination that the vehicle “is in the moving state” occurs when the individual is a driver, not that the claim also requires determining that the individual is a driver. *See* Pet. Reply 25. We need not resolve this dispute because even if we interpret the limitation as narrowly as Patent Owner proposes, Kim discloses the limitation as well as “determining that the vehicle is in the moving state.” *See* Pet. 65 (citing Ex. 1003 ¶ 292; Ex. 1005 ¶¶ 33, 74). For example, Kim describes sensing whether the user is a driver or passenger and provides a navigation service “when the user is a driver of the car,” indicating that Kim determines that the individual is a driver. Ex. 1005 ¶ 33. In addition, Barbera determines that “the individual is a driver of the vehicle.” *See* Ex. 1007, 9:25–30; Ex. 1003 ¶ 293; Pet. 65. The fact that Kohli does not determine whether the individual is a driver, as Patent Owner contends, has no impact when the other two references in the combination disclose the limitation. Notably, Patent Owner does not argue that Kim or Barbera fail to determine that the user is a driver of the vehicle. *See* PO resp. 60.

Patent Owner also argues in passing that claim 20’s “determining” step must be accomplished with claim 1’s operation indicators, which exclude reliance on GPS, but Patent Owner fails to tie any aspect of the “determining” step in claim 20 back to the “operation indicators” of claim 1. *See id.* In addition, Petitioner points out that relying on Kohli’s GPS for

IPR2021-01209

Patent 9,152,609 B2

positional information (Kohli's turn detection) does not amount to an "operational indicator," and Patent Owner does not respond to this argument in its Sur-reply. *See* Pet. Reply 25–26; PO Sur-reply 24–25. Patent Owner's limited argument on this subject does not persuade us that claim 20 bars the use of GPS to determine a vehicle's position.

We also find that Petitioner establishes that a POSITA would have been motivated to add Kohli to the Kim/Barbera combination with a reasonable expectation of success for the reasons stated by Petitioner, which we adopt as our own. Pet. 66–67 (citing Ex. 1001, 2:37–40; Ex. 1003 ¶¶ 229, 266, 296–297; Ex. 1005 ¶ 12; Ex. 1007, 2:37–38; Ex. 1013, 5:7–10). Petitioner persuasively sets forth the common technology and issues surrounding the references, which use similar sensors to detect vehicle motion and position information. *See id.* Patent Owner argues against the combination because "[n]either Kim nor Barbera contain any disclosures regarding turning, and Kohli gives no information about how its GPS analysis of a car's movements could be combined with 'one or more predetermined criteria' to derive any information about a vehicle's operational state." PO Resp. 60–61; PO Sur-reply 25 (arguing insufficient evidence of motivation to combine). These arguments fail to address Petitioner's arguments in support of the combination and merely point out isolated differences between the references, while ignoring their commonalities. In addition, Petitioner supports its argument with credible declarant testimony from the vantage of a POSITA, while Patent Owner's arguments as to the interpretation of the references and motivations (or lack thereof) of a POSITA lack any support from the viewpoint of a POSITA. *See* Pet. 66–67 (citing Ex. 1003 ¶¶ 229, 266, 296–297); PO Resp. 60–61. We find Petitioner's interpretation of the references and motivation to

IPR2021-01209

Patent 9,152,609 B2

combine more persuasive than Patent Owner's insufficiently supported attorney argument on these issues.

Based on our review of Petitioner's argument and evidence, we find that Petitioner establishes by a preponderance of the evidence that (1) the combination of Kim, Barbera, and Kohli satisfies all of the limitations of claim 20; and (2) a POSITA would have been motivated to combine Kim, Barbera, and Kohli in the manner Petitioner proposes with a reasonable expectation of success. Accordingly, we determine that Petitioner establishes by a preponderance of the evidence that the combination of Kim, Barbera, and Kohli renders claim 20 obvious.

3. *Conclusion as to Obviousness of Claims 6–8, 10, 12, 15, 16, and 18–20*

A preponderance of the evidence persuades us that claims 6, 10, 12, 15, 16, and 18–20 of the '609 patent are unpatentable as obvious for the reasons provided by Petitioner, while claims 7 and 8 have not been shown to be unpatentable as obvious.

CONCLUSION¹⁸

A summary of our conclusions appears in the chart below:

¹⁸ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

IPR2021-01209

Patent 9,152,609 B2

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 9, 11, 13–14, 17– 19, 21–25	102	Kim	1–4, 9, 11, 13–14, 17, 18, 21–25	5, 19
6–8, 15	103(a)	Kim, Rubin	6, 15	7, 8
10, 12	103(a)	Kim, Mitrovic	10, 12	
16, 18, 19	103(a)	Kim, Barbera	16, 18, 19	
20	103(a)	Kim, Barbera, Kohli	20	
Overall Outcome			1–4, 6, 9–25	5, 7, 8

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 6, and 9–25 of U.S. Patent 9,152,609 B2 have been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED that claims 5, 7, and 8 of U.S. Patent 9,152,609 B2 have not been shown, by a preponderance of the evidence, to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2021-01209

Patent 9,152,609 B2

For PETITIONER:

Scott Border

SIDLEY AUSTIN LLP

sborder@sidley.com

For PATENT OWNER:

Reginald Hill

Lisa Schoedel

JENNER & BLOCK LLP

rhill@jenner.com

lschoedel@jenner.com

Inter Partes Review No. 2021-01209
Patent 9,152,609

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALLSTATE INSURANCE COMPANY,
Petitioner,

v.

ATOS, LLC
Patent Owner.

Case IPR2021-01209
Patent 9,152,609 B2

PATENT OWNER'S NOTICE OF APPEAL

Mail Stop Patent Board
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Inter Partes Review No. 2021-01209
Patent 9,152,609

Pursuant to 35 U.S.C. §§ 142 and 319, and 37 C.F.R. § 90.2(a), Patent Owner ATOS, LLC (d/b/a “RideMetric”) hereby appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision in Case No. IPR2021-01209 entered on January 24, 2023 (Paper 30) (“Final Written Decision”) by the Patent Trial and Appeal Board (“the Board”), and from all underlying orders, decisions, rulings, and opinions related thereto, including without limitation, those within the Decision on Institution of *Inter Partes* Review entered January 25, 2022 (Paper 8). This appeal is timely under 35 U.S.C. § 142 and Rules 4(a)(3) and 15(a)(1) of the Federal Rules of Appellate Procedure.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Patent Owner indicates that the issues on appeal include, but are not limited to (1) The Board’s determinations that claims 1-4, 6, and 9-25 of U.S. Patent No. 9,152,609 are unpatentable; (2) the Board’s construction and application of the claim language; (3) the Board’s consideration and analysis of the expert testimony, prior art, and other evidence in the record; (4) the Board’s factual findings, conclusions of law, or other determinations supporting or relating to the above issues; and (5) all other issues decided adversely to Patent Owner in any orders, decisions, rulings, or opinions

Pursuant to 37 C.F.R. § 90.2(a)(1) and (a)(2), and as reflected in the attached Certificate of Service, this Notice of Appeal is being electronically filed with the Patent Trial and Appeal Board through the P-TACTS System and the United States

Inter Partes Review No. 2021-01209
Patent 9,152,609

Court of Appeals for the Federal Circuit through the CM/ECF System along with the requisite filing fee. A copy is also being mailed to the Office of the General Counsel at the U.S. Patent and Trademark Office

Dated: March 10, 2023

Respectfully submitted,

/s/ Reginald J. Hill

Reginald J. Hill

Reg. No. 39,225

JENNER & BLOCK LLP

353 N. Clark Street

Chicago, IL 60654-3456

Tel: (312) 923-2606

Fax: (312) 527-0484

rhill@jenner.com

Lead Counsel for Patent Owner

Inter Partes Review No. 2021-01209
Patent 9,152,609

CERTIFICATE OF FILING

The undersigned hereby certifies that a copy of the foregoing Patent Owner's Notice of Appeal was served on counsel of record on March 10, 2023, by filing this document through the P-TACTS System as well as delivering a copy via email to the counsel of record for the Petitioner at the following email addresses: sborder@sidley.com and nlove@sidley.com. A copy has also been served on the Director of the Patent and Trademark Office by Priority Mail Express at:

Director of the United States Patent and Trademark Office
c/o Office of the Solicitor
United States Patent and Trademark Office
Mail Stop 8
Post Office Box 1450
Alexandria, VA 22313-1450

Dated: March 10, 2023

Respectfully submitted,

/s/ Reginald J. Hill

Reginald J. Hill

Reg. No. 39,225

JENNER & BLOCK LLP

353 N. Clark Street

Chicago, IL 60654-3456

Tel: (312) 923-2606

Fax: (312) 527-0484

rhill@jenner.com

Lead Counsel for Patent Owner